THE IRON TRADE REVIEW

Vol. LXVII Cleveland, July 1, 1920 *No. 1*

Plant Shutdowns Threatened

Limitation of Use of Coal Cars Has Stringent Effect Upon Iron and Steel Operations—Many Furnaces Banked in East—Labor Controversy in Sheets and Tin Plate Being Adjusted and Plants to Keep Going

EXTENSIVE closing down of iron and steel capacity is nearer at hand than at any stage of the unsettled operating conditions which have gripped the industry for several months past. The labor controversy precipitated by the open shop demands of the Amalgamated Association of Iron, Steel and Tin Workers, however, has prospects of being bridged over without a general cessation of many sheet and tin plate mills this week upon the expiration of the annual agreement. Renewed conferences asked by the union leaders have shown a more conciliatory attitude by the latter. Apart from the labor factor, the transportation situation rapidly is reaching a crisis through the order of the interstate commerce commission practically barring the use of all coal cars for iron and steel shipments to July 21. This is hobbling the industry in a far-reaching way.

Effects of the restrictions upon the use of open top equipment have been more keenly felt during the past week, and they promise to grow exceedingly severe before the allotted 30 days' period has expired. While empty coal cars may be loaded for movement in direct line toward the mines, this is a decidedly limited service and of temporary character. In all directions pig iron, semifinished and finished steel has begun to pile up rapidly in producers' hands, on top of the huge accumulation already on hand. A continuance of this condition only can result in drastic curtailment of output. In eastern Pennsylvania eight blast furnaces have been forced to bank, because their supply of limestone has been cut off by the coal car order. Others are expected to follow. The extremity of the present situation is shown by the fact that many large mills, notably in the Pittsburgh district are scheduling orders for rolling only where the consumer provides the means of transportation.

Auto Output Keeps Up

Insistent demands for all the material on contract the mills can ship serve to controvert reports of enforced curtailment of production by automobile builders due to financial causes. A summary by steelmakers of the situation at Detroit discloses that the different plants are operating to the fullest extent permitted by material supplies. The Ford works are producing at the rate of 3000 to 3500 cars daily and other plants are active correspondingly. A similar condition is shown among the automobile parts manufacturers.

Though new buying is moderate, consumptive demands generally remain large as revealed by the index of specifications against tonnage previously placed. This is particularly true with the Steel corporation mills, the obvious answer being the lower booking prices of that interest. The leading western producer has been receiving specifications at the rate of 40 per cent in excess of shipments. The capacity of some of the smaller bar mills of this company now is being taken up into the second quarter of 1921.

Prompt Iron Goes High

Urgent calls for spot pig iron especially basic, have continued this week and have been intensified by the narrowed traffic facilities. Further sales of prompt basic iron have been made at $44.50, valley, and lots have been closed at $45. There have been various sales in the East at $44 to $45.50, delivered. A large current inquiry for basic remains unsatisfied because of the scarcity of this grade. Interior New England points are paying around $50, delivered, for Alabama foundry iron for water shipment by way of Boston and have closed for eastern Pennsylvania metal at $49.90, delivered, or $47, furnace. At Cleveland, 1000 tons of spot southern Ohio iron went at $49.65, delivered.

British Take Much Scrap

Recent purchases of heavy melting steel on this side by English and Scotch dealers are estimated at 150,000 to 200,000 tons. The scrap market which has been sluggish and weak is beginning to reflect the influence of foreign buying coupled with some renewal of domestic interest.

Chicago reports an inquiry from the Orient for 96,000 tons of cast iron pipe. The Australian commonwealth has bought 20,000 tons of ship plates from the Steel corporation. American billets have been delivered at Liverpool at $9.90 per ton under the British market.

THE IRON TRADE REVIEW

Devoted to the Iron, Steel, Foundry and Metalworking Industries
Published Every Thursday by
THE PENTON PUBLISHING CO., CLEVELAND
Member, Audit Bureau of Circulation and Associated Business Papers, Inc.

BRANCH OFFICES

CHICAGO - - - - - - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - - 501-505 Commercial Tribune Bldg.
NEW YORK - - - - - - - - 2203-2206 No. 220 Broadway
BOSTON - - - - - - - - - 426 Old South Bldg.
PITTSBURGH - - - - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - - - - - 40 Metzerott Bldg
BIRMINGHAM, ENG. - - - - - - - Prince's Chambers
LONDON, ENG. 2-4 Caxton House, Westminster, S. W. 1.

Cable Address, IROTRAPEN, London

Subscription, United States, Cuba and Mexico, $5 per year. Canada $7.50 and other Foreign Countries, $10 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

Copyright 1920 by the Penton Publishing Co.

IN THIS ISSUE

	PAGE
Iron and Steel Market Review	1
Editorials	2, 3
Iron, Steel and Scrap Prices	4, 68, 72
Index to Market Reports	4
Iron and Steel Markets	5 to 15
American Competition Growing	17
British Talk of a "Slump" but Prices Go Up	17
British Export Business at a Standstill	18
French and Belgian Markets	19, 20
A. S. T. M. Holds Busy Sessions	21
Studying Failure of Steel Rails	25
Shattered Zones Are Found Along Middle of Head and at Junction of Web and Base and Are Thought to form After Last Pass in Rolls—Cold Rolling Action of Wheels	
Applying Sales Engineering to Pig Iron	28
Builds Modern Steel Plant in California	29
Studies Sulphur Content in Rivet Steel	32
Removing Tar From Coke Gas—II	34
Standardizing Forging Die Blocks	38
Recommends Standard Screw Threads	39
Late News of the Societies	41
Proposes Standards for Shapes	43
Trade Commission Suits Held Up	48
Wage Promise Averts Rail Tieup	53
Economics Affect Tool Trading	55
Machine Tool Sales Are Retarded	56
Good Market Seen in Holland for American-Built Machinery	58

Machinery Salesmanship Returning

DEALERS in machine tools and equipment who a month or so ago were sufficiently forehanded to send out letters to their customers or have their salesmen make a personal call to establish the exact status of orders on their books, acted wisely. They now are able to keep a lucid check on their business in the changed market conditions which confront them. That action, taken late in April or early in May has inspired confidence on the part of their customers and the orders are sticking. One prominent dealer says that as a result of the pursuit of such methods on his part, he has not received a single cancellation. Another prominent middle western machinery house with 49 large boring mills on order, stated when reports of cancellations appeared and some of them actually reached its sales manager's desk for other types of machine tools, it found it necessary to go out and obtain assurances from respective buyers that the machines still were required. The results of this aggressive action have been beneficial.

Other sellers who have received cancellations and thought nothing of it for the reason that orders were on hand or easily obtainable as substitutes because of the better deliveries offered, now are realizing that the complexion of the market has changed; that no longer a seller's but a buyer's market prevails, and that real salesmanship again is necessary to win orders. It has become of prime importance that every possible order be kept on the books. Not long since, a salesman could sit at his desk and his customers would telephone their orders to him; it would not even be necessary for him to take the initiative in telephoning. This now is changed and dealers are making strong efforts to reduce cancellations to a minimum and retain their old orders and obtain new.

This shift of the market has been brought about by several factors, chief among which has been the tightening of credits. Many manufacturers who planned additions or expansions of capacity have been unable to finance such projects but have continued to receive estimates on probable equipment costs. They state, however, they have postponed their purchases indefinitely. Transportation conditions have strongly restricted new trading in machine tools and equipment the same as in other lines.

Machinery buyers today are less actuated to hasten through estimates or purchases, by the fear that deliveries cannot be had when desired. They are ceasing to bid against each other and are able to put more deliberation upon their respective propositions. This means in the end better and sounder business conditions, but it also means that competition and salesmanship are coming into their own. Sales now being made are more likely to be decided upon genuine merit based on a definitely created necessity and hence are likely to be cancellation proof.

Company Store Promotes Efficiency

GRANTING that the operation of a company store may not be an advantage in employing labor or reducing turnover and that this department may be appreciated by employes much as the average taxpayer appreciates what he gets for his local taxes, the store system does have advantages which merit its existence. From the employe's viewpoint a store is but a money saver and a convenience but the employer believes a well managed store is an asset in the operation of the business.

One company, which several years ago opened a company store to end petty merchandising among employes on company time, has found that the benefits derived by the company fully justify the operation of the store. In this case, the store was incorporated in the supply room and an efficient office man—really a better man that it was first thought the place justified—was placed in charge. This man shortly realized that supplies were being withdrawn without thought of economy and by introducing a billing system to departments, soon had effected rigid economy and a resulting decrease in operation expenses. A price

was placed on every tool and it was soon noticed that employes would purchase tools they desired rather than carry them from the plant. A further advantage of the store was that the buying of employes was controlled during working hours.

The experience just cited indicates that the operation of a company store results in economy and saves money for employes. Although only one example of many, this case illustrates what employers may expect from carefully operated company stores.

Breakdown of Railroad Morale

THE brakeman of a passenger train running between Cleveland and Youngstown made a little speech on labor the other day to a half dozen passengers who were smoking on the station platform. The brakeman observed to one of the men strolling up and down the platform that the railroad situation was becoming very serious. The others became interested and stopped to hear what the brakeman had to say.

"This country sure is courting trouble," he went on to say. "The switchmen's strike tied up things pretty hard, and now we are all on the point of striking. The government hasn't played fair with us. It promised that if we would remain at work it would see that the cost of living came down. It hasn't kept that promise. So the fellows are going to show them that we mean business; we are either going to get more money out of this or we are going to tie this country in a knot."

He proceeded to tell of some of the measures taken in certain towns in the Mahoning valley to keep others from taking the places of striking switchmen.

"If a man comes in down there the grocers and butchers find they can't change a dollar for him. He can't buy food unless he has the right change, and then sometimes he can't buy it. That's the way they fix him. And you can't blame 'em. Why, a brakeman on a passenger train on this road only makes $4 for a 10-hour day. Believe me, the railroad men in this country are set to make trouble, unless the government or the railroad owners themselves do something mighty quick."

The spectacle of a railroad brakeman making such a speech in public indicates the temper and the present state of morale among the nation's railroad workers. Before the government took over and managed the railroads he would not have dared to express himself like that, but now he is spreading strike propaganda among his passengers. Frank speech at the proper time and place is the proper thing, but this savors of veiled threat and intimidation of the public. That the situation is well understood is indicated by the statement of an official who is directing coal transportation on a number of railroads by direction of the interstate commerce commission, who declares that "the switchmen's strike has done more harm to the transportation facilities of this country and to the basic industries depending on these facilities than if all of the railroad men had gone out on strike and we had had a short but sharp clash."

Without question the biggest problem of industry and business in general today is transportation. This is a question not only of a deplorable lowering of morale among the workers but of a great deficiency in equipment. The government itself, both by omission and commission, has much to answer for in this connection though it must not be overlooked that the railroads themselves before the period of federal control were most dilatory in keeping up equipment replacements and betterments.

Copper Deadlock Near End

SEVERAL leading copper companies recently have reduced their dividends, reflecting the relatively low selling price of that metal and the continued dullness of the market. For several months copper has been beset by difficulties, perhaps more so than any other metal. The outlaw railroad strike hampered both refinery production and manufacturing consumption, although traffic conditions lately have shown considerable improvement and this is being translated into broader plant operations. The worst obstacle has been the prolonged strike in the Waterbury, Conn., brass mills, where unskilled laborers have been out for nearly three months. More copper is consumed in the Waterbury district than in any other center in the world and the protracted curtailment of consumption there has been a millstone to the copper market. The curtailment has been aggravated by the policy of some other mills not affected by the strike, which have been buying sparingly and drawing upon reserves, fearing a possible reduction in the market, due to lessened consumption. The leading copper producers nevertheless have maintained their 19 cent price for prompt and July shipments, 19.25 cents for third quarter, without shading. Small lots of copper have changed hands in the outside market at lower prices, but this business has not affected the major market. Now the Waterbury situation gradually is clearing up and increasing numbers of the men are returning to work. Actual ending of the strike probably will be followed by a buying movement in copper, which may mean higher prices. Stocks of refined copper have been steadily decreasing and production has been affected all along the line by the railroad troubles. Supplies of ore and blister copper as well as refined metal have been reduced by labor and traffic setbacks and this curtailment is yet to exert its full influence. Producers are behind on their deliveries and are not showing any disposition to break the price deadlock with any reduction. It is significant that the stock quotations of two important copper companies advanced rather than declined following recent reductions of their dividends.

Iron and Steel Prices

CORRECTED TO WEDNESDAY NOON—SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 68 AND 72

Pig Iron

Bessemer, valley	43.00
Bessemer, Pittsburgh	44.40
Basic, valley	44.50 to 45.00
Basic, Buffalo	43.00 to 44.00
Basic, Pittsburgh	45.90 to 46.40
Basic, delivered, eastern Pa.	44.25 to 45.50
Malleable, valley	44.00 to 44.50
Malleable, Pittsburgh	45.40 to 45.90
Malleable, Chicago, furnace	43.50
Malleable, Buffalo, furnace	46.25
Malleable, delivered eastern Pa.	47.00 to 48.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern delivered Phila.	$48.10 to 50.90
No. 1X, Buffalo	48.00
No. 1 foundry, Chicago furnace	45.25
No. 2 foundry, valley	44.00 to 45.00
No. 2 foundry, Pittsburgh	45.40 to 46.40
No. 2 foundry, Buffalo	45.00
No. 2 foundry, Buffalo, Boston del.	48.90 to 49.90
No. 2 foundry, Chicago furnace	43.00 to 45.00
No. 2 foundry, Ironton furnace	45.00 to 45.50
No. 2 foundry, Cleveland furnace	44.00 to 45.00
No. 2X, eastern, del., Phila.	46.85 to 49.35
No. 2X, eastern, N. J., tidewater	47.10 to 49.35
No. 2X, Pennsylvania, Boston del.	48.90 to 51.15
No. 2 foundry, Pa., Boston del.	47.90 to 49.90
No. 2X, foundry, Buffalo furnace	46.25
No. 2X, Buffalo, Boston del.	50.15 to 51.15
No. 2 foundry, del., Philadelphia	45.60 to 48.10
No. 2 foundry, N. J., tidewater	46.10 to 48.10
No. 2 southern, Birmingham	42.00 to 42.50
No. 2 southern, Cincinnati	45.00 to 46.10
No. 2 southern, Chicago	47.00 to 47.50
No. 2 southern, Phila.	47.50 to 48.00
No. 2 southern, Cleveland	47.00 to 47.50
No. 2 southern, Boston	50.00
No. 2 southern, St. Louis	44.30 to 46.30
No. 2X, Virginia, furnace	45.25 to 46.25
No. 2X, Virginia, Philadelphia	49.25 to 50.25
No. 2X, Virginia, Jersey City	49.65 to 50.65
No. 2X, Virginia, Boston	49.95 to 50.95
Gray forge, valley, Pittsburgh	45.40
Gray forge, eastern Pa.	44.00 to 44.50
Silveries, 8%, furnace	56.00 to 58.00
Ohio Silveries, 8%, Chicago	59.80 to 61.80
Tennessee Silveries, 8%, Chicago	58.40
Low phosphorus, standard, Phila.	57.80
Low phosphorus, Lebanon, furnace	47.00 to 50.00
Charcoal, Superior, base, Chicago	57.50

Coke

(At the ovens)

Connellsville furnace	$15.00 to 16.00
Connellsville foundry	16.50 to 17.00
Pocahontas furnace	15.50 to 16.50
Pocahontas foundry	15.50 to 16.50
New River foundry	16.00 to 16.50
New River furnace	15.50 to 16.50
Wise county furnace	15.50 to 16.50
Wise county foundry	17.00 to 18.00

Ferroalloys

Ferromanganese, 80 per cent, delivered, domestic metal	$190.00 to 225.00
Ferromanganese, 80 per cent, English c.i.f. Atlantic ports	185.00 to 195.00
Spiegel, 18 to 22 per cent furnace spot	75.00
Ferrosilicon, 50 per cent, spot and contract, delivered	83.00 to 85.00
Ferrotungsten, standard, per pound contained, furnace	1.10 to 1.15
Ferrochrome, 60 to 70 per cent chromium, 6 to 8 per cent carbon, per pound contained, maker's plant	20.00 to 22.00c
Ferrovanadium, 30 to 40 per cent per pound contained, according to analysis	6.50 to 8.00
Ferro carbon-titanium, carloads, producers plant, per net ton	200.00
Bessemer, ferrosilicon, 10 per cent	62.50 to 67.50
Bessemer, ferrosilicon, 11 per cent	65.80 to 70.80
Bessemer, ferrosilicon, 12 per cent	69.10 to 74.10

Prices at Jackson and New Straitsville, O.

Semifinished Material

BILLETS AND BLOOMS

(4 x 4 inch)

Open-hearth, Pittsburgh	$60.00 to 65.00
Open-hearth, Youngstown	65.00 to 70.00
Open-hearth, Philadelphia	69.10 to 74.10
Bessemer, Pittsburgh	60.00 to 65.00
Bessemer, Youngstown	65.00 to 70.00
Forging, Pittsburgh	80.00 to 90.00
Forging, Philadelphia	79.10 to 89.10

SHEET BARS

Open-hearth, Pittsburgh	$75.00 to 80.00
Open-hearth, Youngstown	70.00 to 75.00
Bessemer, Pittsburgh	70.00 to 75.00
Bessemer, Youngstown	70.00 to 75.00

SLABS

Pittsburgh and Youngstown	65.00 to 70.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$70.00 to 80.00
Grooved skelp, Pittsburgh	3.45c to 4.00c
Sheared skelp, Pittsburgh	3.45c to 4.00c

Shapes, Plates and Bars

(In cents per pound)

Structural shapes, Pittsburgh	2.45c to 3.75
Structural shapes, Philadelphia	2.70c to 4.00c
Structural shapes, New York	2.72c to 4.02c
Structural shapes, Chicago	2.72c to 3.52c
Tank plates, Pittsburgh	2.65c to 3.75c
Tank plates, Chicago	2.92c to 3.77c
Tank plates, Philadelphia	2.90c to 4.00c
Tank plates, New York	2.92c to 4.02c
Bars, soft steel, Pittsburgh	2.35c to 4.00c
Bars, soft steel, Chicago	2.62c to 3.52c
Bars, soft steel, New York	2.62c to 4.27c
Bars, soft steel, Philadelphia	2.60c to 4.25c
Bar iron, common, Phila.	4.00c to 4.25c
Bar iron, common, Chicago	3.75c to 4.50c
Bar iron, common, Cleveland	3.75c
Bar iron, common, New York	4.02c to 4.27c
Bar iron, common, Pittsburgh	4.00c to 4.50c
Hard steel bars, Chicago	3.75c to 4.00c

Rails, Track Material

Standard bessemer rails, mill	$45.00 to 60.00
Standard open-hearth rails, mill	47.00 to 62.00
Relaying rails, light, St. Louis	52.00 to 55.00
Relaying rails, Pittsburgh	50.00 to 55.00
Angle bars, Pittsburgh base	3.00c to 4.00c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mill	2.45c to 3.75c
Spikes, railroad, Pittsburgh	4.00c to 4.25c
Track bolts, Pittsburgh	6.00c to 6.50c
Track bolts, Chicago	4.62c
Track spikes, Chicago	3.62c
Tie plates, Chicago	2.75c to 2.90c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 5c more)

Wire nails, Pittsburgh	$3.25 to 4.50
Plain wire, Pittsburgh	3.00 to 4.00
Galvanized wire, Pittsburgh	3.70 to 4.70
Barbed wire, painted, Pittsburgh	3.40 to 4.15
Barbed wire, galvanized, Pittsburgh	4.10 to 5.10
Polished staples, Pittsburgh	3.40 to 4.15
Galvanized staples, Pittsburgh	4.10 to 5.10
Cut nails, Pittsburgh, l. c. l.	6.19c
Coated nails per count keg, Pitts.	2.85 to 4.10c

Market Report Index

Weekly Market Review	1
Pig Iron	5
Coke	7
Bars	8
Ferroalloys	8
Nuts, Bolts, and Rivets	8
Plates	9
Tin Plate	9
Wire	9
Scrap	10
Cold-Rolled Strip Steel	11
Ore	11
Sheets	11
Cars, and Track Materials	12
Merchant and Cast Pipe	12
Structural Shapes	12
Nonferrous Markets	13
Semifinished Steel	13
Export Market	15
Warehouse	16
British Market	17
Belgian Market	19
French Market	20
Coke By-Products	44
Machine Tools	56

Chain, Piling, Strip Steel

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	6.75c
Sheet piling, base, Pittsburgh	2.55c to 3.65c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 8.50c to 10.00c.

Sheets

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 7.50c
No. 28, bessemer, Pitts.	4.35c to 7.50c
No. 28, open-hearth, Chi.	4.62c to 8.27c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.35c to 9.00c
No. 28, bessemer, Pitts.	4.35c to 9.00c

GALVANIZED

No. 28, open-hearth, Pitts.	5.70c to 8.50c
No. 28, bessemer, Pitts.	5.70c to 8.50c
No. 28, open-hearth, Chi.	5.97c to 8.92c
No. 28, open-hearth, Philadelphia	10.00c to 10.50c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.55c to 7.00c
No. 10, bessemer, Pitts.	3.55c to 7.00c
No. 10, open-hearth, Chi.	3.82c to 6.77c
No. 10, open-hearth, Phila.	3.80c to 7.25c

FULL SHEET SCHEDULE PAGE 72

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.00 to $8.50

Iron and Steel Pipe

Base Pittsburgh to Jobbers Carloads

	Black Per cent off	Galv. Per cent off
Base, Pittsburgh		
¾ to 3 in., butt steel	54 to 57½	40½ to 44
¼ to 1½ in., butt, iron	24½ to 34*	8½ to 18½

FULL PIPE SCHEDULE PAGE 72

Boiler Tubes

Steel, 3½ to 4½ inches, c. l.	30½ to 40½
Iron, 3½ to 4½ inches, c. l.	11

Cast Iron Water Pipe

Without War Freight Tax

(Class B Pipe)

Class A pipe is $2 higher than Class B

Four-inch, Chicago	79.80
Six-inch and over, Chicago	76.80
Four-inch, New York	79.30 to 80.20
Six-inch and over, New York	76.30 to 77.20
Four-inch, Birmingham	73.00
Six-inch and over, Birmingham	70.00

Hoops, Bands, Shafting

Hoops, Pittsburgh	3.05c to 5.50c
Bands, Pittsburgh	3.05c to 5.50c
Hot rolled strip steel, Pitts. stamping quality	5.50c to 7.00c
Cold finished steel bars, Pitts., base	4.10c to 6.50c

Cotton ties, 3000 bundles and over, $2 per bundle mill, June basis, with 1½c per bundle per month carrying charge.

Rivets

Structural rivets, Pittsburgh	4.50c
Boiler rivets, Pittsburgh	4.60c
Rivets ⅞ in. and smaller, Pitts.	40-50 off

Nuts and Bolts

(Prices f.o.b. Pittsburgh)

CARRIAGE BOLTS

(¾ x 6 inches, smaller and shorter)

Rolled thread	30-10 off
Cut thread	30 off
Larger and longer	25 off

MACHINE BOLTS

(¾ x 4 inches, hot pressed nuts)

Rolled thread	40–5 off
Cut thread	30–10 off
Larger and longer	30 off
Plow bolts Nos. 1, 2 and 3 heads	35 off
Other style heads	20% higher
Stove bolts in packages	60–10 off
Stove bolts in bulk	60–10–2½ off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	50–10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	50–10 off
Gimlet and cone point lag screws	40–5 off

NUTS

(Up to 1¼ and 1½ inches inclusive)

Hot pressed, square blank	$1.50 off
Hot pressed, square tapped	1.00 off
Hot pressed, hexagon blank	1.50 off
Hot pressed, hexagon tapped	1.00 off
Cold pressed, square tapped	1.00 off
Cold pressed, square blank	1.50 off
Cold pressed, hexagon blank	1.50 off
Cold pressed, hexagon tapped	1.00 off

Prices Present and Past

Yesterday, a month ago, three months ago and a year ago

Prices are those ruling on the largest percentage of sales, at the dates named

	Price June 30, 1920	Average prices May 1920	Feb. 1920	June 1919
Bessemer, valley, del., Pittsburgh	$44.40	$43.90	$43.15	$29.35
Basic, valley, delivered, Pittsburgh	45.90	44.65	43.65	27.15
*No. 2 Foundry, val. del. Pittsburgh	45.40	45.40	42.40	28.15
*No. 2 Foundry, Chicago, furnace	43.00	43.00	42.25	26.75
Lake Superior charcoal, Chicago	57.50	57.50	55.63	31.75
Malleable, valley	44.00	43.00	43.00	28.65
Malleable, Chicago	43.50	43.50	42.75	27.25
*Southern, No. 2, Birmingham	42.00	42.00	40.00	25.25
*Southern Ohio, No. 2, Ironton	45.00	44.00	43.00	26.75
Basic, eastern del., eastern Pa.	44.25	44.00	40.50	25.50
**No. 2X, Virginia, furnace	46.25	45.75	42.75	26.50
**No. 2X, eastern del., Philadelphia	46.90	46.90	45.00	29.60
Gray forge, valley del., Pittsburgh	45.40	42.40	41.40	27.15
Ferromanganese, 80 per cent, delivered	200.00	200.00	160.00	114.00
Sheet bars, bessemer, Pittsburgh	70.00	70.00	61.25	38.00
Sheet bars, open-hearth, Pittsburgh	75.00	75.00	65.00	41.50
Billets, bessemer, Pittsburgh	65.00	78.75	65.00	41.50
Billets, open-hearth, Pittsburgh	65.00	70.00	61.25	38.00
Steel bars, Pittsburgh	3.25c	3.25	3.85	2.35
Steel bars, Chicago	3.52	3.52	2.62	2.62
Iron bars, Philadelphia	4.25	4.25	3.75	2.595

*1.75 to 2.25 silicon.

	Price June 30, 1920	Average prices May 1920	Feb. 1920	June 1919
Iron bars, Cleveland	$4.00	3.75	2.75	2.52
Iron bars, Chicago mill	3.75	3.75	3.44	2.53
Beams, Chicago	3.52	3.72	3.72	2.72
Beams, Pittsburgh	3.25	3.25	3.15	2.45
Beams, Philadelphia	3.50	3.875	3.75	2.695
Tank plates, Pittsburgh	3.50	3.50	3.70	2.65
Tank plates, Chicago	3.77	4.02	2.92	2.92
Tank plates, Philadelphia	3.75	4.00	4.25	2.895
Sheets, blk., No. 28, Pittsburgh	7.00	7.00	6.00	4.30
Sheets, blue anld., No. 10, Pittsburgh	5.00	5.00	5.50	3.50
Sheets, galv., No. 28, Pittsburgh	7.50	7.50	7.00	5.65
Wire nails, Pittsburgh	4.00	4.00	4.20	3.25
Connellsville furnace coke	14.50	12.00	6.00	3.85
Connellsville foundry coke	15.50	12.50	7.00	4.65
Heavy melting steel, Pittsburgh	25.50	25.50	23.15	17.25
Heavy melting steel, eastern, Pa.	22.00	23.60	25.75	16.15
Heavy melting steel, Chicago	23.50	23.15	25.05	16.75
No. 1 wrought, eastern Pennsylvania	33.50	34.00	36.15	22.50
No. 1 wrought, Chicago	28.00	29.50	30.75	18.70
Rerolling rails, Chicago	34.50	31.50	34.65	19.25

**2.25 to 2.75 silicon.

Spot Pig Iron Brings High Prices

Basic Sells Up to $45 Valley—Southern Ohio Foundry Commands $49.65 Cleveland or $47.25 Base Furnace—Eastern Pennsylvania Foundry Brings $47 Base or $49.90 New England—Many Eastern Furnaces Banked

Philadelphia, June 29.—The limestone situation has become another embarrassing factor in the pig iron industry in the East. Recently the interstate commerce commission issued instructions that open cars with side of 2 feet or more were to be loaded only with fuel. Accordingly the quarries have been unable to ship limestone. As a result two of the Midvale Steel & Ordnance Co. furnaces at Coatesville, five of the Bethlehem Steel Co. furnaces and the Robesonia stack have Brooke furnace, are expected to bank been banked and others, including the in a day or two. The whole situation as to shipments is chaotic. A small number of the steel companies, unable to count on deliveries on existing basic contracts, have been feeling out the supply and two platemakers are reported to have placed substantial tonnages. Some smaller tonnages of standard basic also have been placed.

The American Bridge Co. is reported to have placed some 5000 tons of basic for Pencoyd. Altogether some 15,000 tons of basic and off-basic had been placed the past week, all for tion indefinite requirements of many thousands of tons of basic are pending. The current market ranges from $44 to $45.50, delivered eastern Pennsylvania. The supply of basic is limited and some furnaces are not quoting on current inquiries. Some makers are asking $45, furnace, as a minimum. Low phosphorus also is marked by considerable business and 5000 to 6000 tons of standard iron has been sold at $54, furnace, while at least 7500 tons of copper-bearing low-phosphorus has been sold at $47, furnace, and the minimum price now is $50, furnace. There is considerable pressure for foundry iron for nearby shipment but this grade is hard to get even at high prices. A price of $45, eastern Pennsylvania furnace, for the base grade is less frequently quoted.

Resale Tonnage Appears

Chicago, June 29.—Some tonnage of pig iron for resale is appearing in the market, a situation which has not existed for many months. One melter recently offered 1000 tons of southern iron which circumstances had made it impossible for him to use. It appears also that part of the iron offered by the Ford Motor Co., Detroit, is resale, in addition to the excess of its own make. This has included southern iron and malleable, in addition to foundry iron produced at River Rouge.

Some Chicago iron continues to be held at $43, furnace, for last half, while $45, furnace, is asked for prompt delivery for 1.75 to 2.25 silicon. Southern business consists mostly of prompt iron at $42, base, Birmingham. Contracts for 200 tons and 600 tons have been made recently here. Producers of pig iron at Chicago are much concerned over a new rule announced by railroads to apply for 30 days from July 1, which seems likely to cause considerable difficulty. The ruling is that no shipments originating in the Chicago switching district and destined to consumers in the same district wil lbe accepted without a special permit to be issued by a central bureau.

$42.50 Paid For Southern No. 2

Cincinnati, June 28.—Southern Ohio blast furnaces are unable to ship pig iron and there are indications of an early restriction of production unless recent railroad orders are revoked or modified. A number of furnaces have been stacking iron for several days and some of them are expected to blow out early next week. The Lawrence furnace at Culbertson, O., went out last Saturday. These conditions have stimulated inquiries for southern iron, but sales remain of limited amount and prices are unchanged. A sale of a considerable tonnage of Southern No. 2 (1.75 to 2.25 silicon) to an Illinois melter through a Cincinnati distributor is reported on a basis of $42.50, Birmingham. This is for delivery before Dec. 1. It was announced today that the order of the International Harvester Co., for 10,000 tons of malleable pig iron has not been placed.

Spot Basic is Strong

Pittsburgh, June 29.—Strength in the spot basic pig iron market has grown more pronounced with the reduction of the number of cars available for shipment of contract iron to consumers as a result of the new coal car priority order. In addition to sales aggregating more than 20,000 tons of basic iron within the last 10 days, inquiries are still out for an equal amount for spot delivery. Inquiries are appearing for last half iron. One large steel producing interest has an inquiry out for last half totaling 30,000 tons, at the rate of 5000 tons monthly. The lower price of bessemer as compared with basic iron has caused more buying of bessemer. The result has been a tendency toward the equalization in the price of the two grades. In fact nearly all grades of iron now are more nearly quotable at a uniform price of $45, valley furnace. Bessemer sales closed were for small tonnages at $45. While no single sale of 1000 tons or more has been made, the aggregate tonnage is sufficient to indicate the market. A sale of about 2500 tons of basic was made by a seller in this district this morning to a consumer in central Ohio at $45, valley furnace.

The interstate commerce commission coal car priority order has seri-

ously affected the pig iron situation. Pig iron makers are being denied open top cars with closed bottoms of more than 33 inches in height. The result is that much iron is being piled. One large interest estimates that its car supply is 33 per cent of requirement. Another estimates that its output this month will not exceed 50 or 60 per cent of capacity. Up until a week ago furnaces were shipping more than they produced but now the situation is reversed. Some iron and steel works are so hard pressed for pig iron that a large proportion of their melt is scrap metal. A selling interest in this district which has handled most of the medium silicon foundry iron offered by the Ford Motor Co., reports the bulk of this iron has been disposed of readily, at a price to the consumer around $44.

Car Restriction Is Serious

Cleveland, June 29.—Restriction of shipments in open top cars recently imposed have intensified the transportation problems of the furnaces in this and adjacent territory and the prospects generally are regarded as serious. While it is possible to use empty open top cars when routed in the direct-line to the mines, this is helping producers only to a limited degree, since it narrows the scope of delivery. Furthermore it is considered only a question of time when consumers who can be served in this way will be fully supplied, and the backing up of tonnage will increase. In some cases the mine locations are in different directions than that in which consumers are located. Piling of iron again is being done by a number of furnaces and the indications are that this will grow before the present 30-day restrictions on open-top equipment are removed. A continuing strong demand for early iron is apparent especially in basic. A number of steel works are in the market for the latter grade but are having difficulty in locating tonnages. An Ohio river interest is out for 6000 tons of basic for prompt shipment. A sale of 2000 tons of prompt iron, not in this district, is reported at $44.50 valley. A lot of 1000 tons of off-basic for shipment in this direction was closed at $44.50 southern Ohio furnace. Prices are influenced altogether by the fact whether delivery can be made, since most buyers are under contract and their present needs are due to the fact that they cannot get deliveries from their regular sources. A sale in point was 1000 tons of prompt southern Ohio iron which was closed to this territory at $47.25 furnace for 1.75 to 2.25 silicon, or $49.65 delivered. Some recent carload sales of 2.25 to 2.75 silicon from the same district went at $48.25 furnace. Other sales of prompt foundry at $45 valley base are reported. Inquiry is not large but some fair lots are appearing. One interest in the week sold 2500 tons for prompt and last quarter at $44 base at lake furnace, including one lot of 1000 tons for third quarter. The Westinghouse interests inquired for 1000 tons of malleable and 1000 tons of 8 per cent silveries for last half and has placed the latter. The market range on silveries continues from $56 to $58 furnace on 8 per cent. Recent quotations on 11 per cent bessemer ferrosilicon at $65.80 Ohio furnace failed to take the business which is believed to have gone to electrolytic makers.

Car Order Is Burdensome

Buffalo, June 29.—Considerable indignation is being expressed by blast furnacemen over the latest ruling of the interstate commerce commission to give coal shipments priority in open car equipment. It is, they say, the most drastic and far-reaching measure which has ever been taken by a public commission against the industry. Predictions are being freely made that furnace plants will be compelled to shut down unless some relief can be found in the way of modification of the order. The furnaces finally have managed to work back to about 100 per cent by virtue of extraordinary efforts put forward to obtain coal shipments. This was attained after weeks of effort. The fresh setback means that the benefits of this struggle are likely to be lost. Sales during the week just past were light, though they demonstrate that despite a tremendous loss of production and a large amount of orders, furnaces still are willing to take on certain obligations each week. One furnace sold 1000 tons of foundry iron. Another took 500 tons of the same grade for fourth quarter. This was principally No. 2X and No. 2 plain. This iron was sold at $45 base furnace. A 3000-ton inquiry for malleable is still active.

Southern Sales Improve

Boston, June 28.—With railroads again tightening up on deliveries a renewed buying movement of spot pig iron is taking place. Interest in southern iron for rail and water delivery is particularly strong. The Sloss-Sheffield Steel & Iron Co. through its Boston representative has been making barge shipments to Providence, R. I., and Bridgeport, Conn., and further cargoes are now on the way for these two points where arrangements have been made for storage. The Ocean Steamship Co. has been carrying pig iron from southern points to Boston for several of the Birmingham furnaces. Sales of southern iron during the past week have been close to 6000 tons, nearly all for prompt delivery. Most of this iron has been high silicon iron but is on a $42 base with $1.40 differential. The freight rate to Boston is $5.75 delivered to docks with local freight beyond. The barge rate to Bridgeport and Providence is subject to variation but includes handling charges and amounts to between $9 and $10 from furnace to dock. Foundries throughout New England almost without exception have orders on their books for many months ahead, and nearly all at present are concerned with the supply of raw material. The week has developed many small orders for third and fourth quarter, but the bulk of the present activity is in prompt iron. A Buffalo furnace has considerable resale iron available at $45 base but otherwise the Buffalo price remains firm at $46 with some sales reported at $47. Deliveries from the northern district are handicapped by railroad embargoes. The Boston & Maine and the New York, New Haven and Hartford railroad both have embargoes which will probably be in effect for another week. In Pennsylvania prices are firm with the chief feature being the difficulty in freight movement. An eastern Pennsylvania maker sold approximately 1000 tons during the week to Massachusetts and Rhode Island consumers at $47 base furnace or $49.90 delivered. Other Pennsylvania interests have made small sales. One order for 400 tons for last quarter for a Connecticut consumer has been placed at $45 furnace or $48.90 delivered. The Virginia market holds firm at $45, base. A furnace in that district which recently entered the market sold approximately 4000 tons during the week for last half delivery but other than this little Virginia iron is available. One Massachusetts consumer is about to place 1000 tons for last half and at least half a dozen other foundries are considering moderate purchases.

Demand Improves Greatly

New York, June 28.—Following a period of dullness in the pig iron market in this district, demand has suddenly broadened out considerably. Sales made in this district during the past week to domestic consumers involved at least 10,000 tons, mainly foundry iron, some of which is for shipment outside of this district. New domestic inquiries call for fully 20,000 tons, mostly for last half. There is considerable interest in steelmaking iron, and it is expected that orders for considerable tonnage will be placed shortly. Included in the sales of the past week were several hundred tons of standard basic at $43, eastern Pennsylvania furnace, and a large tonnage of copper-bearing low-phosphorus at $47, furnace. The minimum asking price on the latter grade, now, however, is $50, furnace. There also is a big demand for iron for shipment abroad, but the difficulty in obtaining the iron, and the high prices asked, are preventing consummation of these inquiries in most cases. An export house which during the past week inquired for 80,000 tons of basic, and 20,000 tons of No. 1 foundry for Italy, was able to get only two quotations, one on 10,000 tons of basic, and the other on 20,000 tons of foundry. The exporter stated that the prices quoted were too high to be of interest to the prospective buyer. There are numerous export inquiries in addition to the above, some of which call for 20,000 and 30,000 tons each, of various grades. Iron is difficult to obtain for domestic as well as export shipment. Virginia furnaces are unable to ship north of Roanoke, and the Pennsylvania, Philadelphia & Reading, and Lehigh Valley railroads are not accepting any shipments for points east of Newark, N. J., unless accompanied by permits. Production is being interfered with by the coke situation, so that many furnaces which continued to sell despite their large order books, now hesitate to take any more tonnage. One Warwick furnace continues banked. The Cranberry furnace in Tennessee temporarily is banked. A number of furnaces are operating at reduced blast due to lack of coke. Another furnace now out of blast, for minor repairs, is Low Moor furnace in Virginia.

Because of the present high coke

prices, quotations on eastern Pennsylvania foundry iron now continue to advance. While it was easy a week ago to obtain eastern Pennsylvania foundry iron at around $45, furnace, base, this quotation now is unusual, and in most cases, $45.75 to $46, furnace, base, is being asked, and sales continue to be made at $47, furnace, base. Prices on central Pennsylvania foundry continue to show an advancing tendency, and sales of foundry for last half have been made by the furnaces in that district during the past few days at prices ranging from $45 to $46, base furnace. A few hundred tons of spot foundry of odd analyses, which were offered by the Virginia Iron, Coal & Coke Co., last week at $45, base, furnace, were snapped up without delay.

Little Selling Is Done

St. Louis, June 26.—A little scattered business in pig iron for prompt delivery is reported by sellers and a few small orders for future shipment have been placed but regular buying has not been resumed. Consumers generally seem content to await developments. Iron makers are declaring however that the high price of coke, and increased freight rates on other raw materials will preclude a possibility of cheaper pig iron this year. One furnace interest in the Chattanooga district has backed up its views by withdrawing its $42 figure for No. 2 Southern (1.75 to 2.25 silicon) and now is naming $43. Offerings of iron from a new source have appeared in this market. Northern and eastern manufacturers have developed surplus stocks of pig iron which they want to dispose of. In the week a leading Detroit automobile interest offered here a large tonnage of mixed grades, ranging from 2 to 7 per cent silicon content. Deliveries on contract are considerably more prompt than heretofore. Dealers report some requests to expedite shipments, but quite as many to hold back.

Southern Market Recovering

Birmingham, Ala., June 29.—Inquiries for pig iron have started to broaden again in the Birmingham district and a few sales have been made for delivery during the last quarter. One sale called for 1500 tons. Quotations remain firm at $42 for No. 2 foundry (1.75 to 2.25 silicon.) A large producer reports 4000 tons sold at $42. Furnace companies are not feeling the effect of the coal and coke curtailment so much and are taking steps to protect themselves against further trouble with the transportation facilities. Ore, coal and coke cars are being purchased to be operated between mines and furnaces, exclusively. So far, there has not been so much difficulty in getting cars to ship iron and box cars are being used. Drastic orders against the use of open top cars except for coal hauling is interfering with shipments of cast iron pipe, sanitary pipe, foundry and machine shop products and there may be some curtailment of the melt of iron, if modifications are not shortly invoked. The Gulf States Steel Co. has resumed operations at its furnace at Gadsden and two other stacks are scheduled for operation during the coming month.

Coke Market Is Active

Spot Fuel Sells Up to $18 and $18.50—Interpretation of Coal Car Order Awaited With Interest—Supplies Scarce

Pittsburgh, June 29.—The coke market is showing increased activity this week due partly to the transportation situation and partly to the fact that consumers are seeking to lay in supplies over the holiday next Monday. Spot furnace coke is being sold at from $16.50 to $17.50, ovens, while the foundry grade ranges from $17 to $18, although some sellers say that if the coke is available $25 a ton easily could be obtained on small lot requirements. The interstate commerce commission's order establishing priority for coal cars for the coal mining industry has disturbed the coke trade during the past week. Encouragement is derived, however, from the fact that the commission's order is being interpreted by the railroads to mean that a coal car is a gondola and a hopper car with the exception of any gondola equipped with coke racks or gondolas suitable for the mill trade and particularly equipped with coke racks and a hopper car equipped with coke racks. This is taken to be that coke and coal cars will be segregated and returned to the use of their respective industry. Some operators believing that while 50 per cent of the cars used in the coke trade are coal cars only a small per cent of the cars used in the coal trade are strictly coke cars. Others believe, however, that if all the coke cars are to be returned to this trade the supply of cars for coke will be adequate. Next week will decide this point.

The chief hope for weakening in the coke price lies in the possibility of heavy coal production. Coke prices have been largely influenced by the bidding up of large steel producers who have by-product coke ovens. Increased coal production following the new railroad order will mean by-product coal output also will be favorably affected, a development which would tend to remove the steel producers from the beehive coke market. With blast furnaces at present the need for coke is acute. Production of coke in the Connellsville region for the week ending June 19 is estimated to have been 178,730 tons as compared with 185,230 tons of the previous week.

Foundries Further Embarrassed

Boston, June 28.—The foundry coke situation has tightened until it now becomes a serious factor in the future operation of New England foundries. The Providence Gas Co., Providence, which started the season with large surplus stocks of coal has been forced to cut into its supply so heavily during the past two weeks that it now faces an almost complete exhaustion of its reserve with new arrivals inadequate to its requirements. This interest has notified its trade that curtailment of production may be necessary unless the situation eases at an early date. Sliding scale contracts from the Providence interest are expected to advance in July. The New England Coal & Coke Co. still is operating at curtailed production with increasing difficulty in securing coal shipments. Coke shipments from this interest are subject to prices prevailing at time of delivery. No immediate relief for foundries is in sight from the Connellsville district as freight congestion is again severe with embargoes obtaining on nearly all lines. Foundries with orders far ahead are clamoring for increased coke shipments.

High Sales in East

Philadelphia, June 29.—Coke continues hard to get. Offerings are eagerly snapped up despite high prices. Spot foundry has been sold at $18 and $18.50, and spot furnace at $18, Connellsville. These figures apparently are minimum. No contract coke is offered.

Conditions More Disturbed

Cincinnati, June 28.—Conditions are more disturbed in the coke market in this district than at any time for several months. Supplies are scarce, shipping conditions are such that but little can be brought into the market and consumers are so short that the shutdown of many foundries is probable. Recent spot sales of Connellsville were up to $16.50 for furnace and $17.00 to $18.00 for foundry. There is no Pocahontas coke in this market and dealers announced yesterday that they are unable to make quotations or accept orders for either New River furnace or foundry. There is some Wise county foundry coke offered on contract at $18.

Government Collects Data

St. Louis, June 26.—The scarcity of coke becomes more and more pronounced as time passes. There is a deluge of complaints relative to high prices, inability to secure tonnages even at exorbitant rates, and the transportation situation. Numerous consumers are very uncertain over their future supplies and in consequence are extremely cautious about booking new business involving specified delivery dates. Dealers who have been trying to hold the market within bounds, are gravely worried about restoration of a fuel administration. It is known that Washington has been quietly investigating the traffic in spot coal and coke.

Southern Production Lagging

Birmingham, Ala., June 29.—Coal production in Alabama is less active strikes at a dozen and more mines together with a serious railroad car shortage playing havoc with the output. The strikes are at mines which furnish domestic coal in the main, though several batteries of coke ovens are affected. The Semet-Solvay Co. has not been able to get sufficient coal to operate to full capacity. Independent producers are unable to fill contracts in hand, let alone consider new business. Coke continues to sell at $11 to $12.50 for 72-hour quality, what there is little to be offered.

Bar Situation Is Tighter

Pittsburgh Makers Producing Only as Consumers Assure Means of Delivery—Some Chicago Mills Sold Into Second Quarter of 1921

Chicago, June 29.—With the leading interest and the leading independent fully sold on soft steel bars for the remainder of this year, most importance is now given to production and shipments. Car supply is essentially unimproved and new orders equal production while mills are able to send out tonnages about equal to daily rollings. Steel which has been rolled and stored at mills is much needed by consumers, but cannot be delivered because of lack of cars. The leading interest is producing at about 75 to 80 per cent of normal, having 19 blast furnaces in operation in this district, which is unchanged from last week. The impression is gaining that steel mills probably will be forced to close down by lack of fuel for part of the present year, which will prevent delivery of much bar tonnage already on books. The conclusion of some mill men is that it would be better to close down for a month or more during July or August and accumulate as much fuel as possible for use during later months, when mill production can be carried on at a higher rate in cooler weather. Some of the smaller mills of the leading producers are booked full into the second quarter of 1921.

Bar iron makers are entertaining a large inquiry for this product with railroads more active than formerly. The quotation remains firm at 3.75c, mill, for large sections and 4.00c, mill for smaller sizes.

Hard steel bars are firm at 3.75c, mill, with specifications somewhat lighter than they have been, due to the fact that this is between seasons with agricultural manufacturers. Reinforced concrete builders are active in the market and find it difficult to cover their requirements.

Orders Are Plentiful

Philadelphia, June 29.—Steel bar demand continues good and the mills represented in this territory declare they are able to book all the tonnage they want. Most makers continue to be forced to turn business away. One maker reports its aggregate sales of steel bars past week at 3000 to 4000 tons at 4.00c for third quarter. This included one lot of 1000 tons and another of 500 tons. A lot of 500 tons of bands was closed at 5.50c Pittsburgh.

Heavy Demand Continues

Pittsburgh, June 29.—Merchant bar mill products continue in heavy demand in this district. One maker still is quoting 4.00c and is able to book new business because its mills can roll comparatively prompt tonnages. Other makers have their schedules composed of orders taken some months ago which they have been unable to get out of the way previously because of transportation and other operating difficulties. As a result, they are not in a position to provide prompt tonnages. A large per cent of shipments from independent mills for next quarter will be made at the 3.00c base.

Deliveries are far behind in this district. The leading interest at the present time is operating only at a sufficient rate to produce what consumers will guarantee delivery for. Consumers are arranging for the rail and barge shipments and also are getting their material away in trucks. Stocks are reported to be piling up in other mills. The prices are somewhat easier for concrete reinforcing steel bars due to the dullness in the building trade. These range from 3.25c to 4.00c.

Difficulty is being experienced by iron barmakers in moving material. At some mills here production at present is placed at 80 per cent and shipments at 50 per cent. Common iron bars show no change in price and are quoted at 4.50c base.

Parts Production Keeps Up

Cleveland, June 29.—Manufacturers of automobile parts in this territory continue to carry on active production programs and are insistent in getting all the material possible under the circumstances against their running contracts. No evidence of a slowing down in the automobile industry is reflected from their operations. While there have been a few cancellations and suspensions of orders for parts these have been so small in proportion as to be practically negligible. The pinch of the backwardness of deliveries from the mills is being felt more keenly among the manufacturing consumers of bars in this territory and operations are becoming more and more crippled. Pressure for material upon the mills is correspondingly greater. One maker is quoting reinforcing bars at 3.75c, mill, but prompt deliveries usually command 4.00c. A sale of about 2500 tons of hot rolled strip steel has been closed at 6.00c, Pittsburgh, based on a sliding scale arrangement.

Inquiry Is Heavy

Pittsburgh, June 29.—The shortage of cold-finished steel bars under 1-inch in diameter continues to feature the market in this district. The inquiry from machine tool makers is especially heavy. While 4.10c is the minimum price under the old contracts, little tonnage is being shipped at this price. Some tonnage is being sold as high as 10.00c for spot delivery. Shipments with some makers are reported as good while in other quarters hardships are being experienced. Demand continues good for all sizes.

Bolt Inquiry Continues

Chicago, June 29.—Consumers of bolts and nuts continue to besiege producers with an inquiry much heavier than usually is met and entirely too great to be entertained. Raw material is being received by producers in better volume and plant operation has been increased in some instances to 80 per cent of normal. Much of the business now being offered must be refused.

Increasing Demand Noted

Pittsburgh, June 29.—The demand is increasing for nuts, bolts and rivets and deliveries are lagging behind the needs of consumers. Plants are operating about 60 to 70 per cent of capacity and some makers report slightly better shipping conditions while others are still severely handicapped. Material is being obtained by a number of makers through barging and trucking from mills in the Pittsburgh district and in this way only can sufficient raw material be obtained to sustain operations even on a limited scale. Some makers here have not advanced their prices to the level asked by certain sellers. Increased costs, however, are expected to cause prices to become uniform soon.

Ferro Prices

Shaded to $190 by Second Hands—Standard English Offered at $185

New York, June 28.—Shading by second hands in the ferromanganese market has become a fact. One lot of 200 tons of standard ferromanganese for shipment commencing with July, has been sold by second hands during the past week, at $190, delivered. Standard ferromanganese for the same delivery also was offered at $195, delivered. Prices asked by first hands continue unchanged. Domestic producers are asking $200, delivered, for second half, and $225, delivered, for third quarter offerings of standard English ferromanganese are authorized at $185, tidewater, for shipment late this year and early next year, but no sales yet have been made. Spot ferromanganese continues to be held at a premium over futures. The lowest price at which spot ferromanganese now is obtainable seems to be $225, delivered. However, the metal can be obtained in carload lots at this figure, and it no longer is necessary to pay $250, delivered, for spot ferromanganese. Spiegeleisen continues strong at $75, furnace, for 20 per cent metal. While there has been no important business during the past week, there are two new inquiries, one for 500 and the other for 300 tons.

Demand for high-grade ferrovanadium, material low in silicon and nickel, has been relatively heavy, especially from the manufacturers of crucible high speed steel. Some bids as high as $9 a pound are reported. High silicon ferrovanadium continues to be quoted $6.50 a pound contained, base. The leading producer is steadily increasing its production and shipments, especially since the New York harbor situation has improved sufficiently to permit more Peruvian ore to come through to the works. June shipments were about twice those of May, which in turn were much larger than April.

The market for ferrotungsten continues slow. Domestic makers still are asking $1.10 to $1.15 a pound contained. Foreign material for immediate shipment from abroad is offered at prices considerably under this range, but more deferred shipments

are quoted at prices close to the domestic price range. Demand is light.

The domestic makers of ferrochrome are quoting 19 to 21 cents a pound contained for material containing 6 to 8 per cent carbon.

The ferrosilicon market remains dull. Several large consumers are yet to appear for their requirements for the last half. Prices are steady at $82.50 to $85, delivered.

Sellers Seek Business

Pittsburgh, June 29.—Business in ferroalloys in this district at present appears quiet and sellers are canvassing the trade for orders. The lack of inquiries denotes the apathy of consumers. The market for 80 per cent ferromanganese remains firm at $200 for last half delivery. An offering of 15 tons for spot delivery at $250 has been before the trade but as far as can be learned has not proved attractive because of the prices. A verification is lacking of a report that an inquiry for 1500 tons of ferromanganese which was put out the fore part of this week by a Philadelphia concern, has been closed at $250 per ton.

Quotations around $80 for ferrosilicon has failed to stimulate interest to buyers in the market. Spiegeleisen is quotable at $75, furnace, for 18 to 22 per cent, with no unusual transactions being reported.

Market Generally Quiet

Chicago, June 29.—Little demand is apparent for ferromanganese but occasional sales are being made, the local producer maintaining its quotation of $250, delivered, for prompt material and $200 for last half. For definite portions of last half the figure is $225. Spiegeleisen is inactive, with a few transactions at $75, furnace, and it is believed $70 could be done on an attractive tonnage. A spread continues in bessemer ferrosilicon, which is quoted by most makers at $67.50, furnace, for 10 per cent. One producer has been quoting $5 less than this figure and recently booked 800 tons for last half at that level.

Lowered Stocks

Continue in Tin Plate and Production Also Is Shipped

Pittsburgh, June 29.—In addition to making possible the reduction of stocks piled at the mills in this district, the recent car preference order for tin plate has taken care of current production also. As a result makers believe that the tin plate will reach can manufacturers in ample time for the seasonal food packs. Makers, however, are apprehensive lest the expiration of the car preference order may result in fresh congestion which may again necessitate direct action to save the late food packs this season. At the present time the indications are that the interstate commerce commission will not extend this order. While the preferential order has had a beneficial effect on tin plate shipments, this improvement has been at the expense of shipments of sheets and other products. The demand for tin plate is still strong and export inquiry continues large. Prices continue from $7.50 to $8.50 per base box, Pittsburgh.

Australia Closes on Plates

Places 20,000 Tons with Largest Producer—50,000 Tons of Ship Steel Revoked—Market Settles to Around 3.50c in the East

New York, June 28.—The Australian commission has placed an order for 20,000 tons of plates and shapes with the United States Steel Products Co., to be used for ships to be constructed by the commonwealth of Australia. It is understood the purchase was made on the basis of the Steel corporation's domestic prices. It is understood the contract for ships which was practically closed between the Submarine Boat Corp. and the Italian government, has been canceled by the Italians. Approximately 50,000 tons of steel were involved and tentative orders for this steel have been canceled. New demand for plates in this district includes mostly small tonnages such as specifications for locomotives, for railroad repairs or for boilers. The price named on tank plates, as a rule, is 3.50c, Pittsburgh, although 3.25c has been named in some cases where quick deliveries are not so important. On Lloyd's specification ship plates the market may be quoted 3.50c to 3.75c, and on firebox and boiler steel, 3.75c.

Eastern Market Around 3.50c

Philadelphia, June 29.—The plate market in the East seems to have settled for the time being to around 3.50c, Pittsburgh, for sheared tank quality with fair sales at 3.75c. Despite rumors of lower figures this seems the minimum level for independents. The latter are complaining of high costs and say they cannot afford to sell at less. Production continues to be greatly hampered. Last week's recurrence of the outlaw railroad strike resulted in embargoes which practically tied up the Coatesville plants which now are unable to make shipments or obtain materials. If the strike keeps up, some mills will have to shut down. Plate business of the past week included some moderate tonnages for third quarter but large tonnages are lacking. Buyers at low prices are being disappointed in deliveries and are anxious to place plate tonnages elsewhere for early shipment but the figures at which they are selling their own product do not enable them to pay prices acceptable to independent makers. New inquiries include some good sized export tonnage. Some export sales were made the past week at 3.75c, Pittsburgh.

Market Is Weaker

Pittsburgh, June 29.—Inquiries from coal and steel companies who plan to buy their own cars as the only solution of their transportation difficulties are supplying about the only activity in the plate market in this district at the present time. The market on the whole is dull and the price is showing a weakening tendency. While 3.50c, Pittsburgh, is still quoted by large independent makers, 3.25c could be obtained without much trouble.

Taking Tonnages at 3.75c to 4.00c

Cleveland, June 29.—The leading platemaker in this district continues to quote from 3.75c to 4.00c, and at this figure has taken on about 10,000 tons in the past week or 10 days. These quotations apply on plates for fairly prompt shipment.

Demand Less in West

Chicago, June 29.—With the exception of plates required for railroad car building, inquiry is considerably less than has been the case recently. This is due to the fact that most consumers are already covered for their last half requirements and are not yet seeking further material for next year. Inquiry for about 30,000 tons of steel, mostly plates, for 3000 freight cars is an interesting development of the past few days. Builders of tanks and similar devices are in the market steadily for plates. The leading interest continues to quote 2.92c, Chicago, while the leading independent will book moderate tonnages for fourth quarter delivery at 3.77c, Chicago mill.

Output Drops

In Wire Products Caused by Car Restrictions—Nails Sell Higher

Pittsburgh, June 29.—The shortage of cars last week caused the improvement with respect to shipments of finished product that was being made by important wire makers in this district to be checked somewhat. One large interest had 332 cars of wire products ready for delivery as compared with around 250 cars a week ago. Owing to the hot weather and the shortage of some materials, especially of billets, the mills are proceeding on a reduced manufacturing schedule for the present week. The lack of billets at some rod mills late last week caused shut-downs but this has been remedied sufficiently to permit of all departments to be operating this week. The market continues to be featured by the heavy demand for all kinds of wire products and nails, while many orders are being refused by leading makers because of inability to make deliveries. Wire nails continue to be quoted at 3.25c to 4.50c, Pittsburgh. Plain wire is quoted at a range of 3.00c to 4.00c, Pittsburgh.

High Nail Prices Rule

Philadelphia, June 29.—Mills in some cases are obtaining higher prices for nails. Several hundred tons of nails and staples were sold in the week at 5.30c, Pittsburgh, for third quarter, and considerable business offered at this price was turned away.

Nail Output Reduced

Chicago, June 29.—Scarcity of cars, delay in obtaining raw material and a few hot days have combined to cut down production of wire and nails from the previous high mark. This is of comparatively little importance, however, since the best effort of mills has sufficed only to ship about equal to production while accumulated stocks in warehouses remain unchanged.

Export Scrap Sale Huge

Purchases of Heavy Melting Steel by British Isles Total 150,000 to 200,000 Tons—Better Buying Conditions in Several Districts

FOR COMPLETE SCRAP PRICES SEE PAGE 68

Philadelphia, June 29.—Despite the lack of domestic demand for melting steel this grade is strongly held by reason of large foreign sales made during the past month. England and Scotland have bought 150,000 to 200,000 tons at a range of $24 to $30, delivered seaboard. These buyers insist on the choicest grades so that the best scrap in the east is being called out for export and the dealers are saying domestic buyers consequently will have greater difficulty when they come into the market. Most of this export scrap still is to be shipped, due to the bad transportation situation. None yet has been shipped through Philadelphia and New York. The only substantial movement so far has been through Boston. In view of the high prices obtained on this export steel scrap, dealers are not anxious to push any transactions at bargain prices to domestic users. Chemical borings were sold the past week at $21, delivered. Some rolling mill inquiry is out for cast borings. Wrought scrap is stagnant. Demands for cast scrap are not so active.

Car Shortage Hinders

Boston, June 28.—The scrap iron and steel market already dull has been almost entirely extinguished by a sudden scarcity of cars. No open cars have been available during the past week for scrap shipment and many consumers are not in a position to accept box car consignments. In spite of this box cars have been freely used for cast grades and in some cases for borings and turnings. The No. 1 machinery market continues its exceptional record of firmness and prices in excess of $43 delivered to the consumer have been reported during the week. However, there is not much demand and other cast grades have shown softness. No. 2 machinery has sold at $36 and below. The export trade in heavy melting steel still continues with some large size orders yet to be filled. One cargo of several thousand tons has already been completed and it is reported that 4000 or 5000 additional tons have been purchased by the export interests. Prices range from $20 to $22 delivered to docks.

Heavy Steel Brings $26

Buffalo, June 29.—Scrap consumers who have not covered for future requirements are beginning to wonder whether their indifference in this regard will have a serious outcome, in view of the restrictions that have been drawn in the matter of cars. The prohibition of open equipment for any other purpose but to load coal has hit the scrap trade hard. To the difficulty of getting any large tonnage, now has been added the transportation restrictions. It has been definitely learned that the heavy melting steel recently purchased by a Buffalo user is at least 20,000 tons and possibly more. The price was $26, or $2 above that paid for the past six weeks by another local works which has been quietly picking up considerable steel. The hydraulic compressed material which was bought along with the steel amounted to at least 5000 tons and went at $23.50. Dealers are predicting a rising scrap market. All dealers have covered themselves on the recent purchases, with the result that not only is no steel being shipped outside the district, but outside dealers are being asked to ship on tonnage.

Consumers Use Stocks

Pittsburgh, June 29.—With practically no material moving and with buying on a small scale, the scrap market in this district continues to be characterized by dullness. Mills are using their stocks of scrap, a condition growing out of the transportation situation, and the only available supply at present is from dealers' accumulations but even this is not being called upon heavily. The market for stove plate showed signs of strengthening somewhat last week, a sale of this product having been made at $30.50. Dealers however, report that that tonnage could be purchased for the quoted price of $30. Sales of heavy melting steel at $25.50 and $26 were reported in the past week. One sale of 500 tons of cast iron borings is reported at $18.

Valley Buys Some Steel

Cleveland, June 28.—The iron and steel scrap market here is without feature as compared with that of last week. There is some buying of heavy melting steel in the Mahoning valley but no local demand is in evidence, consumers still having heavy stocks. Prices are looking up, a little heavy melting steel being quoted $23 to $23.50 here.

Prices Up On Buying

Chicago, June 29.—Buying of a considerable tonnage of heavy melting steel and similar grades by an important independent steel maker, coming after some less heavy users had been taking tonnage, has given additional strength in these classifications and to the market in general. Steel grades are advanced about 50 cents per ton from last week's level. Dealers believe this is the beginning of an upward movement and are covering to protect sales already made, which is giving the market additional firmness. Rerolling rails especially are scarce, and eastern mills using this material have inquired in the Chicago market, while prices paid in the east have been sufficient to tempt rails away from this center at former quotations. As a result rerolling rails are somewhat higher than last week. Expectation of a strike in bar iron mills has prevented an advance in rolling mill grades, and comparatively slack operation of foundries keeps cast scrap no more than steady. Only one important railroad list is now pending, the Chicago, Burlington & Quincy offering 5000 tons.

Protest Car Restriction

St. Louis, June 26.—Scrap iron and steel dealers here are much exercised over the government's general order No. 7, which prohibits loading coal cars with anything but fuel. A meeting was held June 24 and was attended by every dealer of consequence in the city, at which the subject was discussed and a memorial directed to the interstate commerce commission asking that the stringent provisions of the order be modified. Consensus of opinion among those present was that should the regulation remain in effect longer than 30 days, the term for which it was originally intended, every scrap yard and rolling mill in the district will be obliged to shut down. It is suggested that permission be given to load such cars as have contents directed to points between the scrap yard and its coal loading destination. Trading in the week has been insignificant in volume, and mainly at unchanged prices. Actual transactions in reality were too scant to base accurate quotations upon, so that prices are largely nominal. No railroad offerings appeared.

Detroit Affected by Car Embargo

Detroit, June 28.—The interstate commerce commission's order against the use of gondolas for the shipment of any materials other than coal and agricultural implements, has affected the movement of scrap iron and steel in this district, and at present there is no market for such material. After two weeks of excellent railroad service few dealers were ready for such a turn of events, and suffered accordingly. Detroit will feel the embargo more acutely than most cities, it is believed, because other railroad difficulties, due to strikes and lack of fuel, created a serious situation at this point. Trading is listless. Prices, however, remained relatively steady. There has been a marked attempt to overcome transportation difficulties by lake shipments.

Large Interests Inquiring

Cincinnati, June 28.—The iron and steel scrap market continues dull with a painful tardiness in the revival of buying by big consumers predicted more than a fortnight ago. It has been somewhat stimulated, however, by a number of inquiries for heavy melting steel from large interests, which indicate they are in the market for heavy tonnage. These have had no direct effect on prices and quotations throughout the list remain unchanged. Buyers at this time are dubious as to the ability of dealers to make prompt deliveries, but they are being assured that there will be no delays on early orders.

Quiet Market in South

Birmingham, Ala., June 29.—The scrap iron and steel market in the South continues quiet but a new trouble looms up in the drastic orders by

the interstate commerce commission that open top cars must not be used for the hauling of any commodities except coal. This eliminates the handling of old material in open top cars and it is a difficult matter to get box cars for that purpose. Old scrap contracts are beginning to work out and but little new business is being offered. The largest consumer of heavy melting steel is offered $19 delivered but dealers are asking considerably more. Old material prices generally are more or less nominal as the market is so quiet.

Ore Shipments

To Interior Furnaces About Half of Expected Tonnage

Cleveland, June 29.—As the season progresses and no improvement is made in transportation it is becoming apparent to certain furnace interests that they will have serious difficulty in obtaining ore to continue operations next winter and spring. Operators already are receiving reports as to the predicament in which these interests expect to find themselves unless there is an immediate increase in tonnages shipped. The first indications of this are coming out in the form of calls for certain grades of ore with which to round out mixtures, and in the past week a number of such inquiries were received in the Cleveland market. Inquiries of this nature are common enough, but under the existing conditions in regard to transportation it is difficult to supply such tonnages promptly when needed.

"The shipping situation with regard to iron ore is very serious," says H. M. Grigg, manager of the Ore and Coal exchange, "but it is improving with respect to coal. Some furnaces are not getting the ore they need immediately, let alone what they will require later in the year and next spring.

"Based on 1918 records, which is the corresponding movement, there should be shipped by rail from Lake Erie ports 11,120,000 tons of ore up to July 1. Actually, there were shipped but 4,848,000 tons up to June 21.

"With regard to the movement of coal to the upper lake ports: Up to June 21 there were shipped 2,487,000 tons from Lake Erie ports. Up to the same date in 1919 there were shipped 7,160,000 tons, and in 1918, 5,908,000.

"The pooling arrangements are proving effective in moving coal, but no such arrangements apply to iron ore."

Strip Makers Sold Up

Pittsburgh, June 29.—Makers of cold-rolled strip steel in this district report that they are sold up for the balance of the year. The demand is very strong and operations are being hindered by the transportation difficulties which are restricting receipts of raw materials. Shipments also are far in arrears of the demand. Operations at present are at about 60 to 65 per cent of capacity. Prices continue strong, ranging from 8.50c to 10.00c per pound, base Pittsburgh.

Sheet Business Blocked

Uncertainty Over Labor Situation and Growing Shortage of Cars Puts Damper on Trade—Strong Demand for Prompt Tonnages

Youngstown, O., June 29.—The sheet market is featured by a strong demand, lack of spot tonnages and renewed difficulties encountered in shipping which are likely to force the mills to slow down again within the next few days. Coupled with these factors in the market at present is the uncertainty in regard to the labor situation due to the demands of the Amalgamated Association of Iron, Steel & Tin Workers, and while this uncertainty persists the manufacturers are not keenly disposed to accept business. They are taking on forward contracts for material to carry the price prevalent at time of delivery and have disposed of practically all of their capacity for the balance of the year. Some of the larger producers are turning away dozens of inquiries, while others are managing to let their regular customers have comparatively small tonnages of spot sheets, but nowhere near enough to provide for requirements. One buyer from Kansas seeking 3000 tons of sheets went the rounds of the big mills this week without succeeding in getting his supplies. Black sheets for prompt delivery are commanding 8.00c, and galvanized, 9.00c, while blue annealed is selling at 5.50c. Some of the larger manufacturers are quoting 5.50c on blue annealed, 6.50c on black and 7.30c on galvanized, but have no material available at these figures. The procurement of spot tonnages in this district is largely a matter of negotiation with some of the smaller manufacturers who are not greatly overloaded with orders, and with them the higher prices prevail. Two or three weeks delivery is the best that can be promised on any tonnage. This week the car supply took a serious turn for the worse, and instead of having 20 per cent of their car requirements it now looks as though the manufacturers will have but 5 per cent. This is due to order No. 7, recently issued by the car service commission. Open top cars may be billed only in the direction of the coal fields, according to this order. Manufacturers are endeavoring to obtain an interpretation of the order to determine whether this includes the coal fields of Ohio and western states as well as Pennsylvania and West Virginia. They also are endeavoring to determine whether it applies to gondolas, as 70 per cent of the mills' output recently has been shipped in this type of cars. The order was issued June 21 and is to remain in effect 30 days. Some of them, however, are preparing for temporary shutdowns during July for inventories. Material is piling up at the mills in large quantities again and some of them are operating under serious handicaps.

Operations in Doubt

Pittsburgh, June 29.—Independent sheetmakers are of the opinion that a shutdown during July and August as a result of the disagreement between the Amalgamated Association of Iron, Steel and Tin Workers and the National Association of Sheet and Tin Plate Manufacturers may not be as general as had been anticipated. A second conference of representatives of these association was held Tuesday at Columbus, O. The possibility that a shutdown may occur has cut down sheet inquiries within the last few days. Moreover, makers are not anxious to book ahead heavily in view of the uncertainty. Where some attention has been turned to new business by the makers, delivery is to be made subject to shipping conditions. No improvement in transportation is reported by operators in the last week and the situation is extremely acute. In fact, there has been a smaller movement of sheets from some mills owing to the fact that many box cars have been sent west for grain movement while the open top cars formerly used for shipping sheets and covered at the expense of the consumer now are all diverted to the coal trade. Even when these box cars are to be found, preference to their use has been given to the tin plate manufacturers.

The leading producer estimates a stock accumulation of 30,000 tons of sheets and unless some relief in the car situation comes this week, a large number of mills of this interest will be forced to suspend. There has been no recession in prices in any grade of sheets, No. 28 open-hearth black being quotable between 4.25c and 7.50c, No. 28 galvanized 5.70c to 8.50c and No. 10 blue annealed 3.50c to 7.00c. While there are rumors of blue annealed being sold at 6.50c, which is shading the spot market price, sales at this figures cannot be verified and the spot market seems to be nearer 7.00c.

Mill Output Slackens

Chicago, June 29.—Return of hot weather has cut deeply into production of sheets in this territory, men working only part time and then not as efficiently as usual because of the temperature. This is reducing output materially and adding to the tonnage which probably will be carried over at the end of the year. The leading independent sheetmaker is more than sold for this year and is entirely out of the market. The only source from which reasonably prompt deliveries can be obtained on new business is one or another of independent mills which to the east are asking prices in the neighborhood of 9c, Pittsburgh, for No. 28 gage black and other grades in proportion.

Demand is Undiminished

Philadelphia, June 29.—The pressure for sheets continues undiminished both for deliveries on contract and for additional tonnage. Sheets now are hard to get for any delivery this year. The minimum price on blue annealed in the East now is 5.75c to 6.00c, Pittsburgh, and 6.50c is being done. Considerable tonnage for last quarter for one-pass cold-rolled for last quarter at 8.00c, Pittsburgh, has been closed.

Shapes Show Little Life

New Inquiry and Awards Are Lagging — Small Orders Predominate — Some Cancellations of Plain Material in East

New York, June 28.—Little new inquiry has come out during the past week in the local structural market, and trading has been quiet, no action having as yet been taken on pending contracts. Prices are holding fairly steady, with further transportation difficulties retarding shipments of shape mill production at some eastern Pennsylvania points.

Some Tonnage Is Canceled

Philadelphia, June 29.—An Ohio fabricator has canceled with an eastern mill a tonnage of shapes placed several months ago below 3.00c because the construction contract which it covered has been revoked. Shapes can be had from mills at 3.25c to 3.50c, Pittsburgh, which now indicates the market, but the situation is confused by resale offerings ranging from 3.00c to 3.50c. New business is scarce, the largest structural letting being the Pennsylvania state office building, Harrisburg, requiring 2000 tons.

Inquiries Still Lagging

Pittsburgh, June 29.—Uncertainty of the traffic situation and the tightness of the money market are combining to keep structural shape inquiries in this district at low ebb. Such inquiries that are out represent building that can be done through private financing and without aid of bank borrowing. Structural shapes still are quotable at 2.45c to 3.75c Pittsburgh.

Cleveland Market Dull

Cleveland, June 29.—The shape market in this district continues to be devoid of any features of importance, there being a comparatively small amount of business in plain material and practically no demand for structural tonnages. An indefinite inquiry for 3000 tons which was up a week ago is still active. A seasonal lull is anticipated for several weeks, but it is rumored in the market that several large building projects which have been held over for months are becoming active again, with the possibility of new inquiries being made within the next few days.

More Structurals Placed

Chicago, June 29.—A number of building projects, each involving only a small tonnage, were closed during the past week and were widely distributed among fabricators. Building in general continues at a low ebb, and numerous structures already planned are being held back by costs and the labor situation, as well as by the uncertainty of the receipt of material in the present state of transportation.

CONTRACTS AWARDED

Additions to naval air service station, Lakehurst, N. J., 300 tons, reported placed with McClintic-Marshall Co.

Logan bridge over Canadian river, Quay county, New Mexico, 362 tons, to independent shop.

High school at Bay City, Mich., 250 tons, to independent shop.

Steel for machine and finishing rooms for the Consolidated Water Power & Paper Co., Grand Rapids, Mich., 212 tons, to independent shop.

Foundry building for the Herschel Mfg. Co., Peoria, Ill., 173 tons, to A. Lucas & Sons.

Machine shop Provo, Utah, for the San Pedro, Los Angeles & Salt Lake Railroad Co., 152 tons, to Omaha Steel Works.

Strand theater building Lansing, Mich., 117 tons, to Federal Bridge Co.

Riveted pipe Logan, Utah, for Cache county, Utah, 105 tons, to concrete construction.

Truck shop and store house for American Car & Foundry Co., Buffalo, general contract John W. Cowper Co., Inc., 300 tons of steel to Buffalo Structural Steel Co.

Boiler house for Standard Oil Co., Atlas Works, Buffalo, general contract to John W. Cowper Co., Inc., Buffalo, 550 tons of steel to Kellogg Structural Steel Co.

Blacksmith and machine shop for American Car & Foundry Co., Buffalo, N. Y., general contract John W. Cowper Co., Inc., 250 tons of steel to Kellogg Structural Steel Co.

Contract for Stanton St., pier, New York City, 140 tons to the American Bridge Co.

Addition to Curtis building, Philadelphia, 600 tons; to American Bridge Co.

Extension to Frankford elevated railroad, Philadelphia, 1600 tons; to Phoenix Iron Co.

Addition to Tubize Artificial Silk Co.'s plant, Hopewell, Va., 1100 tons; to Virginia Bridge & Iron Co.

Breaker for Hudson Coal Co., Scranton, Pa., 1300 tons; to independent shop.

Bridge at Riverside plant of Otis Steel Co., Cleveland, 150 tons; to American Bridge Co.

Pennsylvania state office building, Harrisburg, Pa., 2000 tons to Bethlehem Steel Bridge Corp.

CONTRACTS PENDING

Draw bridge for Union Pacific railroad, 264 tons, bids in.

Crane runway for Truscon Steel Co., Chicago, 216 tons, bids asked.

Highway bridge at Savannah, Ga., 1100 tons, bids asked by Kelly Atkinson Construction Co., contractor.

Diocesan college, Sioux Falls, Iowa, 230 tons, bids in.

Superstructure of bascule bridge at Madison street, Chicago, 1300 tons, bids asked.

Addition to plant of Vreeland Motor Corp., Irvington, N. J., 300 tons; indefinitely postponed.

Addition to Hearn's department store, New York, 200 tons; bids being taken.

Great Tonnage

Of Cast Iron Pipe Asked for Orient —Mill Stocks Increase

Chicago, June 29.—The city of Detroit has placed 3000 tons of cast iron pipe with the Lynchburg Foundry Co. and 4000 tons by the American Cast Iron Pipe & Foundry Co. Most inquiry on the part of cities now is for small tonnages. A special assessment improvement in Chicago requiring 100 tons is up for bids June 29. A matter of some interest is an inquiry by an export broker for 14 miles of 48-inch pipe and 28 miles of 54-inch for shipment to the Orient. This is a total of about 96,000 tons, and the cost would be close to $6,000,000.

Tonnage Still Being Piled

Pittsburgh, June 29.—One large independent pipe maker reports that it has 3000 tons of pipe piled in its yards and that the traffic congestion probably will cause this amount to be largely increased this week. Some of the independent makers, however, report that they have seen some little improvement in shipments within the last week or so but this does not appear to be a general situation. Jobbers' shelves in the Pittsburgh district are almost bare and they are pressing for shipments. No price changes have occurred in the pipe trade. The demand continues active and most mills are sold up far ahead.

Less Buying in East

New York, June 28.—Buying of cast iron pipe for private account is of good volume, although not as large as that of a month or so ago. As has been the case for many weeks, there is little municipal or foreign demand. Prices are unchanged, but with sellers booked far into the future, the market is displaying great strength.

Car Shortage Troubles

Birmingham, Ala., June 29.—The cast iron pipe plants in the Birmingham district as well as the sanitary pipe and fittings works are working almost to full capacity. A strong demand for sanitary goods is current while small sizes of cast iron pipe are being sought freely. Pipe makers are concerned as to the effect of the railroad car shortage and rulings as to the use of open top cars.

Equipment Orders

In June Include 5500 Cars and 207 Locomotives

New York, June 29.—June brought out inquiries for approximately 13,000 cars, the majority being from industrial concerns. The largest individual inquiries, however, were from railroads, the Elgin, Joliet & Eastern asking for 2500 cars, and the Big Four for 2000. The largest industrial inquiry was that of the H. C. Frick Coke Co., involving 1000 hoppers. Car orders approximated 5500, the majority of which were inquired for prior to June. The largest orders were those of the Hoppers Co., Chicago, the Virginia railroad and the Chesapeake & Ohio, each specifying 1000 cars. Locomotive orders exceeded inquiries. A total of 207 locomotives were placed, while inquiries included but 133. The largest orders were those of the Northern Pacific and the Illinois Central, involving 75 each. The largest inquiry was that of the Chicago Northwestern, calling for 70.

Present railroad equipment inquiry is more active, there being several new lists and some substantial buying. The Rainey-Wood Coke Co., New York, is in the market for 500 hopper cars, and the Mathers-Colliers Co., Cleveland, for similar number. The Nashville, Chattanooga & St. Louis railroad is inquiring for 100 miscellaneous cars; the United Alloy Steel Corp., Canton, O., for approximately 50 hoppers; and the Pennsylvania-Oklahoma Equipment Co., for 150 tank cars. Included in current orders are 250 cars for W. H. Warner & Co., Pittsburgh; 25 hoppers for the Aluminum Co. of America, New Kensington, Pa.; and 160 hoppers for the Republic Iron & Steel Co., Youngstown, O.; all going to the Pressed Steel Car Co. The Minneapolis & St. Louis railroad has placed 15 locomotives with the American Locomotive Co., and the Noroeste de Brazil, 20, with the Baldwin Locomo-

tive Co. Locomotive inquiries include 70 for the Chicago & Northwestern; 30 for the Manila railroad, and 40 for Mitsui & Co., New York City.

More Inquiry Than Sales

Chicago, June 29.—Inquiry for railroad freight cars continues to be received by builders and the situation remains almost devoid of selling. A confidential inquiry is being figured calling for 1000 box cars and 2000 general service cars. Another inquiry is for 100 flat cars requiring about 600 tons of steel.

The railroads continue to inquire for their standard steel rail requirements for 1921, and a large tonnage could be booked if the mills would quote. However, nothing is being done along this line, and this business will be held in abeyance for the present. Track fastenings are in good demand, with makers limiting sales and making no promise as to delivery. Much activity is present in the market for light rails, and the local mill is filled to the point where delivery is much advanced.

Detroit Buying Rails

Detroit, June 29.—Bids have been opened by the Detroit United Railway Co. for 4100 tons of 91-pound girder rails for replacements. The Lorain Steel Co. was the lowest bidder, being $25 per ton lower than the only other bidder which was the Bethlehem Steel Co.

Semifinished Is Strong

Open-hearth Sheet Bars Touch $80, at Youngstown, While Wire Rods Sell at $85 — Car Shortage Increases as Demand Grows

Youngstown, O., June 29.—A tremendous demand for sheets and tin plate is reflected in the market for sheet bars, and during the week a fair tonnage of open-hearth bars was sold by one interest at as high as $80 Youngstown. Something in excess of 10,000 tons was placed recently in the district at prices ranging from $75 to $80, a good share of the tonnage being taken at $76 and $78 a ton, with the average somewhere between these two figures. A few buyers approached the market claiming to be able to buy open-hearth sheet bars at $72.50, but $75 is said to be the minimum done in the valley. Semifinished generally is stronger, with consumers pressing for supplies, which are insufficient for requirements. The chief difficulty is in obtaining cars in which to ship the material. The supply of cars is diminishing again, mills are becoming choked up and another shutdown is foreseen within the next few days. The car supply on Monday was worse than it had been in several weeks, and the car service commission has issued an order against shipping open top cars in any direction save toward the coal mines. This order will reduce the car supply in this district to about 5 per cent of the requirement.

$95 Asked for Wire Rods

Philadelphia, June 29.—Fair sized semifinished sales for the third quarter are reported. Forging billets aggregating 5000 tons were sold in the week at $95 and $98, Pittsburgh. Several carloads of prompt forging billets brought $85. More than 1000 tons of rerolling slabs were sold for the third quarter at $60 and $65. Sales of 1000 tons of sheet bars were made to middle western consumers for quick shipment. Following the sale of wire rods of nail quality at $80, Pittsburgh, $95 is being asked on some good sized business.

Demand Less Active

Pittsburgh, June 29.—Owing to the uncertain outlook for mill operations during the third quarter the demand for semifinished material is showing some tendency to slacken in this district. Although the market for sheet bars still is quotable around $70 and $75 for bessemer and open-hearth respectively consumers are showing a growing disinclination to place orders. Sales of open-hearth in this district have been reported at a shade under the market price or around $73. Mills are receiving few specifications against contracts. The export demand for billets, slabs and skelp continues heavy. Billets and blooms 4 x 4 inches still are quotable between $60 and $65 for both open-hearth and bessemer quality.

Various Sales Made

Cleveland, June 29.—Transactions in semifinished material in this district have continued to call for a considerable tonnage, principally for third quarter shipment. After a period of free selling there are still a number of unsatisfied inquiries in the market particularly for sheet bars, and open demand exceeds the offerings. Sizable lots, amounting to 1000 tons or more have been closed in bessemer sheet bars, slabs and billets at $70 Pittsburgh and in open-hearth sheet bars at $75 Pittsburgh. A sale of 1000 tons of wire rods for third quarter was made at $85 Pittsburgh.

The Nonferrous Metals

	‡Copper	Future Straits N. Y.*	†Lead New York basis	Zinc St. Louis basis	Aluminum	Spot antimony	Nickel ingot
June 23	19.00	47.75	8.00	7.45	33.00	7.625	43.00
June 24	19.00	46.25	8.00	7.45	33.00	7.625	43.00
June 25	19.00	45.87½	8.00	7.45	33.00	7.625	43.00
June 28	19.00	47.00	8.00	7.45	33.00	7.625	43.00
June 29	19.00	47.00	8.00	7.50	33.00	7.625	43.00

*Future shipment from Singapore or London.
†American Smelting & Refining Co.'s price.
‡Producers, second quarter, prompt and July; third quarter, 19.25.

NEW YORK, June 27.—The situation in the nonferrous metal markets has changed little in recent weeks, still being dominateed by the labor and traffic difficulties. The tin market has reflected uneasiness both here and abroad over the disagreement between the Amalgamated Association and independent sheet and tin plate mills. The strike in Waterbury has not yet ended, although more men have been going back to work. This strike has been the biggest retarding factor in copper market. The zinc industry has been experiencing trouble with its labor, for smelters recently have been opposing further increases in wages, due to the fact that zinc is selling around cost as it is. Lead producers also have been having trouble with labor, but for a different reason. The lead workmen, particularly and muckers, are receiving the highest wages they have ever gotten, and so they have been laying off several days a week, thereby cutting down production of lead. The American Smelting & Refining Co.'s electrolytic tin refinery at Perth Amboy, N. J. has been closed by a strike.

Copper prices have been unchanged. Producers have stood firm at 19c, delivered for spot, 19.25c for third quarter. The outside market, however, has remained about 18c, delivered, with considerable business reported at this figure. Consumers have been hunting bargains and have absorbed much of the outside copper. Sales of low priced Japanese copper have been a feature of the market.

The zinc market has been dull and easy, with prices fairly steady at 7.50c, East St. Louis, for prompt and third quarter, although a good consumer might have shaded this figure with a producer on a bid. Galvanizers have been showing little interest in zinc and apparently a smaller proportion of their output of sheets is galvanized now than ever before. High grade zinc is quoted about 9.25c, New York.

The lead market has remained firm, following the recent reductions of the leading interest to 8c, New York. Supplies of prompt lead have not been increased appreciably and prompt has been quoted 8.50c, New York, in some of the outside markets.

The tin market has been irregular, with repeated wide swings in price and little interest among consumers. Dealers have been less active than usual, due partly to the attitude of the banks and partly to the caution displayed by importers. Prices have ranged from 45c to 47c for Straits tin for shipment the past week, with spot tin quoted 48c.

The antimony market has been dull and easy, spot metal being obtainable at 7.50c, duty paid, New York. The advance in silver prices has assisted Chinese exchange, increasing the cost of antimony for importation.

Large foundries have been buying aluminum steadily in the outside market, business being done at about 32c. for virgin 98 to 99 per cent ingot. No. 12 alloy remelted has been quoted 30c to 33.50c and No. 1 remelted 31.50c, a shade lower. Sheets have been well maintained at 60c to 65c base in the outside market.

Buys Ordnance Plant

The Morgan Engineering Co., Alliance, O., has acquired the United States ordnance plant in that city, which was completed in 1917 at a cost of $2,000,000. The building is 900 feet long and has five large wings. Machinery and equipment for the plant is said to have cost $6,000,000. The Morgan company has made no announcement concerning the use to which the property will be put.

Begin Fight on Ore Rate Raise

Sixty-eight Producers Lined up Against Jones & Laughlin Proposal When Interstate Commerce Commission Hears Case—Oppose Any Increase in Freights From Mines to Docks—Furnaces Also Represented

WASHINGTON, June 28.—Representing some 68 members of the Lake Superior Iron Ore association, of Cleveland, Jean Paul Muller Saturday entered before the interstate commerce commission "a most emphatic protest against any increase in the iron ore rates at present in effect from the mines of the 68 companies to upper lake ports." Muller's protest was aimed largely at a petition and plan for ore freight rate advances presented by William W. Collin Jr., of Pittsburgh, representing the Jones & Laughlin Steel Co.

Others to appear at the hearing were H. D. Rhodehouse, of Youngstown, O., for the Youngstown Sheet & Tube Co., Republic Iron & Steel Co., Sharon Steel Hoop Co., Brier Hill Steel Co., Shenango Furnace Co., and Trumbull Steel Co.; James P. Daly, traffic manager of the Donner Steel Co., of Buffalo, for the Donner company, Lackawanna Steel Co., Rogers-Brown Iron Co., Wickwire-Spencer Steel Corp. and Buffalo Iron Furnace Co.; James Bowron, president of the Gulf States Steel Co., Birmingham, Ala., for the Gulf States company, Alabama Co., Sloss-Sheffield Steel & Iron Co., Woodstock Iron Corp., Sheffield Iron Corp., and the Republic Iron & Steel Co.; Robert Hula, assistant traffic manager of the Steel & Tube Co. of America, and the By-Products Coke Corp., of Chicago; C. L. Lingo, traffic manager of the Inland Steel Co., Indiana Harbor, Ind.; and Frank R. Raiff, traffic manager of the American Smelting & Refining Co., for 13 western copper and lead ore and smelting interests.

In beginning his case, Mr. Collin explained some of the points brought out in the Jones & Laughlin petition, published in the June 17 issue of THE IRON TRADE REVIEW, and recently filed with the commission. The fundamental issue, according to Collin, and "one upon which I think various interests object to this proposal, is this: In making a general advance applicable on a commodity used by an industry, as highly competitive as the iron and steel industry, is it preferable to increase differences in the same measure as you increase the rates, or is it preferable to give the carriers their revenue and maintain differentials?"

"Where have the new furnaces been built in the last 10 or 15 or 20 years?" asked Collin. "It is the lake front that has got the furnaces, and not the interior. It is the lake front that today the interior furnaces, in Pittsburgh and other districts, have to watch as their competitors."

Under the Jones & Laughlin plan Buffalo will have to pay the same rate as to the increases that Pittsburgh pays, or 37½ cents a ton over the present rate, and so far as the increases are concerned the Buffalo furnaces might better be located at Pittsburgh, Collin said, on the stand. The net result, he said, of the proposal is to preserve the 91-cent spread between the lake front and Pittsburgh. To prevent the furnaces at Duluth being forced to pay the entire tariff, Collin recommended the publication of a separate one for them.

Muller said the 68 members of the Lake Superior Iron Ore association are opposed to any increase in the ore rates from the mines to the upper lake ports because:

"First: Because the iron ore rates applied to their shipments and paid by your petitioners prior to June 25, 1918, were grossly excessive.

"Second: Because the application of specific increases per ton under General Order 28, effective June 25, 1918, has produced still more excessive rates on iron ore which have been collected from and paid by your petitioners ever since, which rates are unjust and unreasonable in and of themselves.

"Third: Because the iron ore rates now in effect, and any increases therein, increase the revenue of a few iron ore carriers, who do not need the additional revenue, while the inclusion of the investment and revenue figures of these same iron ore carriers in a general tabulation of the western rate district upon which this commission would calculate a percentage increase in rates on other commodities for application on the lines of all carriers in the western district would produce an erroneous result to the disadvantage of over 90 per cent of the general commodity carriers who are not benefited by the excessively high iron ore rates.

"Fourth: Because every addition to these iron ore rates in excess of a just and reasonable rate for the service rendered automatically increases, needlessly, but nevertheless substantially and progressively, the cost of all iron and steel articles which must be purchased by all the railroads, not the ore carriers only, for inevitable maintenance and increase in plant and equipment. These avoidable additional costs would still further increase unnecessarily the present high operating expenses and add further values, created by the rate increase, to the plant and equipment account, requiring almost immediately further increases in general freight rate levels to meet the increased costs."

"Your petitioners," Muller continued, "object most emphatically to any further increase in iron ore rates from the mines to upper lake ports because, by General Order 28, an increase of 33.6 cents per ton became operative which should first be removed to restore the relationship of rates established by your commission prior to June 25, 1918. The increase under General Order 28 was a war measure for which there is no longer any justification and its continuance, under present conditions, deprives your petitioners of advantages attaching to the geographical location of their furnaces on the lake front."

Daly, speaking for Buffalo interests, said the Buffalo furnaces claim that present iron ore rates are unjust and unreasonable for the reasons:

"That as to increases made by General Order 28 they are deprived of their natural advantage due to geographical location.

"That as to increases in rates made by General Order 28 they are burdened with a portion of the cost of the lower lake rail haul, although their ores are never subjected to such haul."

The Buffalo interests further objected to present rates as a basis for an increase in rates:

"Because while improperly burdened with increased ore rates they are required to pay increased rates on coal, coke, limestone, brick and clay, whereas industries located inland being near to the source of supply of these commodities are in large measure relieved of this additional cost.

Duluth Interests Opposed

Duluth, June 29.—The Duluth joint basic steel committee will oppose the proposal made by the Jones & Laughlin Steel Co., and other independent interests for increasing freight rates on iron ore from mines to docks and prorating the tariffs between northern and southern lines. It is to be pointed out to the interstate commerce commission that ore mined on the Minnesota ranges and consumed at the plant of the Minnesota Steel Co., would take the same railroad freight rate as ore shipped through to Pittsburgh. The move to increase the northern rates, as the first step in the readjustment, is considered discriminatory against Duluth interests.

Strikes Check Export Deliveries

England the Best Customer of the Week—Closing of Sheet and Tin Plate Mills Would Complicate Export Sales — Shipments Through New York Increase—Many Small Tonnages Contracted for Prices Easier

NEW YORK, June 28.—Export business for June will record another low mark for the year, a fact due largely to the transportation difficulties and delayed mill deliveries. A little optimism prevailed in the market during the past week because more shipments were reported received at the port of New York. Several export houses declared that they received more shipments at the port during the past week than during the two months previous. That statement, however, probably requires some explanation. One exporter declared in his case he received two carloads last week whereas he had not received one shipment during the previous month.

Several independent mills have notified the exporters that if a wage agreement cannot be reached shortly with the Amalgamated association, they may not expect any deliveries on their old orders during either July or August. This promises to cause complications since much tin plate is under contract for foreign customers and letters of credit will mature.

Exporters say that the mill deliveries on sheets are bad, but that there has been an improvement in nails, wire and plates. In the case of the latter materials it is frequently found that delivery can be had during the month following the placing of the order. Inquiries, however, have fallen off materially.

The Oriental market continues listless. Some hope was raised last week by the circulation of a report that certain large Japanese merchants would organize a syndicate to take over bankrupt stocks of steel. One Japanese purchaser in this country explained that the projected syndicate was formed merely for the purpose of preventing the prices on iron and steel in Japan falling below a certain fixed figure. Offers have been extended to take over bankrupt stocks at prices approximating one-half what was quoted before the break. On that basis none of the Japanese merchants desire to sell. They are reselling in other markets at better prices. The syndicate offered to take over bars at 7½ yen per Japanese unit weight. Bars in Japan had been bringing 11 yen. That is the only quotation made by the syndicate.

The South American market has been quiet. It is understood that the Latin-Americans do not care to place contracts with American mills at the present price, especially since they cannot be given any guarantee of delivery in general before the fourth quarter. They are inclined to believe that future prices will be lower and this is no time to tie themselves up with contracts. Inquiries from there are consequently being held off, waiting developments in the industrial situation here. One export house reported the sale of 1500 coils of wire, 400 tons of bars and some few orders of sheets to Argentine. Brazil has been buying like commodities but not in as large quantities. Brazil is asking for some railway material. It wants wheel presses and similar railway machinery. It also has inquired for 5000 tons of 50-pound rails, and has submitted a second inquiry for 3000 tons of slightly heavier sections.

A small export house reported the sale of 200 tons of angles to England last week. An English purchasing agent said that he had contracted in this market for 1000 tons of slabs, 5000 tons of sheet bars and 2000 tons of billets. He said he had been able to place orders for this material at a price approximately $2.50 per ton lower than those quoted by the producers last month. This agent also has bought 2000 tons of Lloyds' plates. It is understood he paid 3.50c Pittsburgh for these plates. This price is not uniform, however, as it was reported by an American export house that they had sold 500 tons of plates to England for 3.90c Pittsburgh. This order is to be delivered within 60 days. This same house sold England 200 tons of billets.

Prices on export material are easier despite the general report that American mills are sold up and the fact that it is so difficult to obtain deliveries.

The Iron Trade Review Expands Abroad

IN ORDER to provide larger and better facilities of a permanent character for the growing requirements of our European division, the London office of THE IRON TRADE REVIEW *will be moved on July 1 from 16 Regent street to 2-4 Caxton House, Westminster, London, S. W. 1. Correspondence for our European office should be addressed to Caxton House hereafter, together with that for the affiliated publications of The Penton Publishing Co., which include the Daily Iron Trade and Metal Market Report, The Foundry, Marine Review, Power Boating and Abrasive Industry.*

As a result of this change, greatly improved facilities will be provided for transacting all of the European business of THE IRON TRADE REVIEW. *Caxton House, which is one of the leading modern office buildings in London, is located in the heart of the Westminster iron, steel, marine and engineering district. It is within a block of the headquarters of the British Iron and Steel institute, Institution of Mechanical Engineers, Institution of Civil Engineers, Institute of Metals, etc. Within a very short distance also are located the houses of parliament, British government offices and the offices of many of the largest iron, steel, shipbuilding and engineering firms in Great Britain, together with the European offices of many of the largest American iron, steel, shipbuilding and engineering firms in Great Britain, together with the European offices of many large American iron, steel and machinery corporations.*

American business men traveling to England are cordially invited to make their headquarters at our London offices. During the coming summer season special facilities will be available for taking care of mail, which may be addressed in care of our European headquarters. Other arrangements are being made to look after the requirements of business visitors and we hope this will be considered as a personal invitation by any of our readers, friends or advertisers who may be going abroad.

Negotiate Scale

Sheet and Tin Plate Workers Meet with Manufacturers

Columbus, O., June 29.—(Special)—Negotiations are being continued here by representatives of the Amalgamated Association of Iron, Steel and Tin Workers and the National Association of Sheet and Tin Plate Manufacturers looking to a settlement of the difficulties over wages and other conditions involved in the demands recently presented by the trades union at the conference with manufacturers in Atlantic City. The new conference began on June 29 and may continue the negotiations a day or two longer, as no settlement was made up to Wednesday.

The representatives of the Amalgamated association asked for the conference after the manufacturers refused emphatically to consider yielding on the question of allowing the association to unionize all workmen in the mills. Manufacturers generally interpreted the association's request as indicating that it was willing to recede from its position and negotiate the question of wages. A compromise was looked for on this point which will insure the signing of a new agreement and the continuance of operation of the mills under the basic conditions that have prevailed in the past.

Mahoning Valley Tieup Is Growing Worse

Youngstown, O., June 29.—Mills in the Mahoning valley continue to operate at from 75 to 80 per cent of capacity, but conditions affecting their operation are growing worse instead of improving. Coal shipments are increasing as the car service commission concentrates its efforts in that direction, but this improvement is being made at the expense of the mills in depriving them of equipment in which to move out their products. Order No. 7 issued by the commission, effective June 21, is cramping and restricting the movement of material to such an extent that the manufacturers claim they will be forced to suspend operation of some units, and in some cases whole mills within a few days. The order prohibits the use of open top cars for shipments in any direction except toward the coal mines. It is to remain in effect 30 days.

Some confusion has resulted in interpreting the order. There is a question whether the commission intended to limit it to the coal fields of Pennsylvania and West Virginia, or to include Ohio, Illinois and other states. Meantime, it is being enforced literally, and the manufacturers say this reducing their available car supply from 20 to 5 per cent of actual requirements. Another point over which there has been some difficulty in interpretation is whether the order is intended to include gondolas, in which 70 per cent of the shipments from the valley have been made recently. An effort is being made to have the commission interpret the order in these two particulars, and it is possible that gondolas may not be included.

The effect of the car shortage is to be observed at all the mills. Storage space is almost exhausted; conditions in this respect are as bad as they were at the worst period in the past few months.

Fraud Is Charged

Pittsburgh, June 29.—Hearing in the case against L. C. Taylor, president, and W. J. Watkins, auditor of the Pittsburgh Tin Plate & Steel Corp., charged with conspiracy to defraud in the sale of stock is to be held Wednesday. The men were arrested in Pittsburgh a few days ago. The corporation was launched as a $12,000,000 concern and according to Charles B. Prichard, city director of public safety, approximatey $1,000,000 worth of stock in the company has been sold, most of it in the Pittsburgh district and western Pennsylvania, at $10 to $14 a share. The authorities charge that the capacity of the company's plant and the assets of the company were exaggerated by the promoters. A statement issued by Watkins declares that the arrests were an outrage. The corporation is solvent and is not a blue sky corporation as alleged, according to the auditor of the concern.

Form Selling Firm

Offices have been opened at 406-407 Bakewell building, Pittsburgh, by Bailey-Lewis, Inc., which recently was organized to sell mine, mill and contractors supplies and to specialize more particularly in sales of locomotives, heating and ventilating apparatus, wooden tanks, industrial cars and equipment, machine tools, steel lockers, steam traps, metallic tubing, acid valves, metallic packing and general mill supplies. William M. Bailey, president of the new concern, formerly was private secretary to the president of the Carnegie Steel Co., Pittsburgh, and assistant to the president of the Midvale Steel and Ordnance Co. D. S. Lewis, secretary and treasurer, also has been intimately connected with the steel industry in the Pittsburgh district for years and formerly was in charge of the Lewis Engineering & Supply Co., which has been merged into the new concern.

Some Prices

Advanced by Warehouses—Structural Material Drops—Stocks Still Light

Cleveland, June 29.—Due to a noticeable letup in construction activities in this district the demand for structural shapes and plates has shown a marked falling off and one warehouse jobber has reduced his quotations on this class of material from 5.50c to 4.50c. Demand for other products is keeping up at a steady rate and dealers report they are having a hard time filling the demand, due to the railroad tieup, which is delaying 70 per cent of shipments. One jobber reports that three-fourths of the material he is able to get from mill is being shipped by truck, and this is taken up as soon as received.

Leases Buffalo Stacks

Buffalo, June 30.—M. A. Hanna & Co., Cleveland, have leased the three blast furnaces of the Buffalo Union Furnace Co. in this city for a period of four years, effective July 1, with the privilege of buying in 20 years. The furnaces have an annual capacity of 350,000 tons.

To Build New Shops

Ground has been broken by the Bessemer Gas Engine Co., Grove City, Pa., for two new shops. One building, 120 x 150 feet, when completed will be used for foundry purposes. The other building will have a ground space 150 x 300 feet. Steel for the buildings now is being fabricated by the Penn Bridge Co., Beaver Falls, Pa., which also is in charge of construction.

Open Hearths Awarded

Contracts by the United States navy department have been awarded William Swindell & Bros., Pittsburgh, engineers and contractors, for the erection of two 60-ton basic open-hearth furnaces at the naval ordnance plant, South Charleston, W. Va. Work on these furnaces was commenced June 21. This company also is erecting at the same plant, 25 large regenerative forging, heat-treating and annealing furnaces for the use of the armor plate department.

American Competition Growing

Belgium Also Becoming Factor in British Market, with Increased Production and Expectation of Larger Offerings—Billets from United States Delivered at Liverpool $9.95 Under English Market—Large Tonnage of Heavy Melting Under Contract

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-4 Caxton House, Westminster.

Sterling, $3.98½

LONDON, June 28.—The question of foreign competition in the iron and steel market is assuming greater prominence, due to the expectations of larger offerings both from American and Belgian sources. Belgium is now producing finished steel at a rate equal to 58 per cent of its prewar output, and pig iron at 32 per cent.

Pig iron continues the strongest feature of the British market. Another 200-ton stack has been lighted in Middlesborough but the supply is expected to continue inadequate for some time. Many inquiries for pig iron, coming from foreign countries, are being refused.

American billets have arrived, carrying the price of £22 10s ($88.56) c.i.f. Liverpool, this price being 50 shillings ($9.95) less than the British market. Sheet bars are offered at £25 ($99.62) c.i.f. Liverpool. A large tonnage of heavy melting steel from the United States is coming to Middlesborough, the first parcel of 10,000 tons being due to arrive soon. Some talk is heard in regard to German pig iron, which is said to be coming to England.

Galvanized sheets are easier and tin plate for the fourth quarter is down, having sold for £3 7s ($13.30) per base box. Production in France is improving, with output in Lorraine at 70 per cent of capacity.

British Talk of a "Slump," but Prices Go Up

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

Sterling, $3.92

BIRMINGHAM, Eng., June 11.—A great deal of talk about a pending slump in prices is current, but further advances were made in two or three commodities this week. Doubtless, consumers have made the most of the passing depression to "bear" the market, but the efforts could not have been more futile. The makers of pig iron in Derbyshire have shown no hesitation in putting up their prices 2 shillings 6 pence (49 cents) and they are booking all the business that they can take. It is a remarkable fact that while everybody is speaking of a slump, the iron and steelmakers are discussing the danger of an approaching famine in pig iron.

Pig Iron Shortage Grows

The shortage of pig iron has long been a matter of common knowledge. In 1913, the average monthly production of pig iron in the United Kingdom was 855,000 tons. In March last it was 699,000 tons, or 156,000 tons below the 1913 average. Of steel ingots and castings, the production per month in the year before the war was 639,000 tons, whereas in March last it had increased to 840,000 tons. There is here a widening gap, and the difficulty is emphasized by the fall in imports of iron and steel from 185,000 tons in 1913, to 65,700 tons in March last. It is true that exports fell from 411,000 tons in 1913 to 290,000 tons in March last, but this merely means that owing to the shortage of pig iron, Great Britain simply cannot handle the business. It is well known that the steel capacity of the country has increased at least 50 per cent, and this fact has to be considered in connection with the great reduction in production of pig iron. The best use is being made of every ounce of steel scrap that can be obtained, but a great deal more pig iron must be made. It is believed that the first essential is that the ministry of transport shall intervene to see that every blast furnace gets fuel supplies and consignments of raw material to enable it to make full output.

The tone in the Cleveland market is very strong, with better inquiry for future iron, consumers apparently having decided that prices now are settled. A form of rationing is in operation. In all the pig iron districts the market shows strength. Consumers are pressing for hematite at the West Cumberland and North Lancashire furnaces. Foreign buyers scarcely get the courtesy of a reply. The home consumers can absorb every ton produced by the 25 furnaces in the Maryport and Carnforth districts, the 14 in Cumberland and the 11 in North Lancashire. In the west of Scotland the same refusal of export business is noted, while the furnaces cannot possibly meet their requirements, and steelmakers are supplementing supplies from their own districts by purchases made in Cleveland.

The Derbyshire increases now make the selling prices for that district £12 5s ($47.93) for forge, and £12 12s 6d ($49.27) for No. 3 foundry, with other prices in proportion. Northampton forge material continues at £11 10s ($45.08), and No. 3 foundry at £11 15s ($45.97). Indications are that any further price changes in the pig iron department will be upward rather than downward.

To Withdraw Coal Control

There is a good deal of elation over the announcement that government control of coal is to be withdrawn. What effect this will have upon prices nobody at the moment can predict; although if the steel trade is a precedent, prices will go upward. A very encouraging sequel is the news that Lancashire mine owners are already placing contracts for the extension and development of their properties. According to one estimate, this should add 40,000,000 tons annually to the coal production. In South Wales, £3,000,000 has been allocated for developments, and new developments are talked of in Kent and Staffordshire. These, of course, cannot add much to the coal available for some time.

The widely advertised decline of confidence in the iron and steel trade kept back a few orders, and there are more or less persistent rumors of cancellations. It is clear that the consumers have done their best to

Current Iron and Steel Prices of Europe

British Market

Corrected to Date by Cable

Domestic and Export. Gross Tons at Works

SEMIFINISHED STEEL

	£ s d	$
Billets soft steel	25 0 0	98.63
Sheet bars	30 0 0	118.35

FINISHED STEEL

Steel bars, England, ⅜ to 3 inch	31 0 0	122.30
Ship plates, England	25 0 0	98.63
Ship plates, Scotland	28 5 0	111.45
Beams, England	23 0 0	90.74
Beams, Scotland	28 0 0	110.46
Sheets, black 24 gage	44 0 0	173.58
Sheets, galvanized, 24 gage	63 0 0	248.54
Rails, 60 lbs. and over	23 5 0	91.73
Tin plate, base box, 108 lbs.	3 11 0	14.01

PIG IRON*

Hematite, Scotch	10 10 0	41.42
Hematite, East Coast Mixed Numbers	13 0 0	51.29
Middlesborough Basic	11 7 6	44.88
Middlesborough No. 3	10 17 6	42.90
No. 3 Foundry, Derby, Leicester, Nottingham	13 2 6	51.78
No. 3 Foundry, Northamptonshire	12 0 0	47.34
No. 3 Foundry, Staffordshire	12 7 6	48.82
Scotch Foundry	12 15 0	50.30
Ferromanganese, 80 per cent.	37 0 0	145.97

*Pig iron quotations are f.o.b. furnace for delivery in the United Kingdom. Export prices generally are subject to free negotiation.

COKE

Yorkshire furnace	3 5 3	12.88
Yorkshire foundry	4 0 0	15.78

French Market

Prices Last Reported

PIG IRON

	Francs per metric ton (2205 lbs.)	$
Hematite, Lorraine	885 to 915	66.99 to 69.27
Foundry, Longwy, 3 per cent Si., sand-cast	600	45.20
Foundry, Longwy, 3 per cent Si., chill-cast	650	49.21
Foundry, Longwy, 2 per cent Si., sand-cast	594	44.97
Foundry, Longwy, 2 per cent Si., chill-cast	620	46.93

COKE

French furnace	245	18.55
German, Belgium and British furnace	275	20.82

SEMIFINISHED STEEL

Blooms	973 to 979	118.52 to 119.24
Billets	945	71.54
Sheet bars	1223 to 2059	148.96 to 250.79

FINISHED STEEL

	Francs per 100 kilos (220 lbs.)	$
Merchant bars	145	10.98
Angles	145	10.98
Normal beams and profiles	145	10.98
*Plates bridge and tank, 5 millimeters and thicker	184½	13.97
*Sheets, black, 3 millimeters	192 to 199	14.53 to 15.06
Bars, cold-drawn, 40 to 60 millimeters, round	220	16.65

Pig iron prices are f.o.b. furnace; semifinished steel prices f.o.b. works; finished steel prices, according to the schedule of the Paris Consortium of Iron and Steel dealers, delivered, except (*) which are from schedule of the Comptoir des Toles.

Belgian Market

Prices Last Reported

PIG IRON

	Francs per metric ton (2205 lbs.)	$
Foundry, 3 per cent silicon, Belgian	900	72.00
Basic-bessemer, Luxemburg	900	72.00
Basic, open-hearth, Belgian	850 to 900	68.00 to 72.00
Basic-bessemer, Belgian	900	72.00

SEMIFINISHED STEEL

Blooms	1250	100.00
Billets	1200	96.00
Sheet bars	1250	100.00
Wire rods	2100	168.00
Standard rails	1500†	120.00

FINISHED MATERIAL

	Francs per 100 kilos (220 lbs.)	$
Merchant bars	150	12.00
Normal beams and profiles	155	12.40
Plates, 5 millimoter and thicker	165	13.20
Sheets, black, 3 millimeters	190	15.20
Sheets, galvanized, 3 millimeters	400	32.00
Plain wire	210	16.80

Belgian franc 7.38c.
French franc 7.19c.

†Plus 50 francs for export.

All prices f.o.b. furnace or works, except finished material, for which delivered prices are quoted

test the market. Some large consumers of billets have been surprised to receive inquiries for specifications from large steelworks with which they have made contracts. Such inquiries have not been forthcoming for years, and prices are firmly maintained. The lowest price asked for steel billets appears to be £26 ($102.12), while a more general figure is £27 ($106.05), and in South Wales, £30 ($117.90) for sheet bars is generally maintained, although there are said to be exceptions.

The British makers have their weather eye open on possible competition from abroad, and especially from America. The latest statistics show that supplies of steel from America are increasing. During May, 14,300 tons arrived, as compared with 12,051 in April, and 13,936 in March. This is a very small total, but the increase is considered significant. At the same time, American inquiries are very numerous, and Canadian and American steelmakers, although unable to do business for the moment, are anxious to keep in touch with this country with a view to a big trade a few months later. At present the quotations are hardly on a business basis. For example, billets are offered at £25 ($98.19) c.i.f. British port. This figure is of no use for competition when the buyer has other expenses to add before he gets his steel. But at a quotation of £2 ($7.86) lower there would be some eager buying.

Material Is Very Scarce

Famine conditions prevail in the gas skelp department. Some makers claim to be able to get whatever price they choose to demand. Sales have been made at £35 ($137.50) per ton, but supplies are so scarce that tubeworks cannot make full time. Americans could sell advantageously below these figures.

Black sheets have been selling lately at as much as £45 ($176.70) per ton, and in isolated cases where needs were urgent, for a good deal more than this. Certain Belgian houses have been sending over sheets at £5 ($19.60) below British prices. A deputation on behalf of British sheetmakers recently waited upon the Belgian producers urging them to come up to British figures, on the ground that the present control of the market the top prices could easily be obtained. The Belgians declined, their argument being that the present selling prices were having a most unsatisfactory effect upon labor, which was getting more and more unmanageable. As a last alternative, the British makers offered to buy the whole of the Belgian output, either in the finished or unfinished form, but to this proposal also the foreigners turned a deaf ear, and therefore, to a small extent, this branch of the trade is to be subject to Continental underselling.

The latest wage advance in the iron trade of 25 per cent on the basis price has been paid this week, adding about 3 shillings (57 cents) per ton to individual wages and something like 10 shillings ($1.96) to the cost of production of a ton of iron. Puddlers' wages are now £2 3s 3d ($8.48) per ton.

British Export Business at Standstill

European Staff Correspondence

MIDDLESBOROUGH, England, June 7.—Business during the past two weeks has been stagnant owing to the strike of the dock and riverside workers. This disturbance occurred at a very critical time. Not only were the docks congested but at the various works large stocks of material awaited delivery, transport facilities having proved quite inadequate. The strike coming as an additional trouble to the existing congestion, created almost a condition of chaos. Many vessels had waited for weeks for a turn at the loading berths, but owing to the impossibility of getting export cargoes of iron and steel on board, they sailed out light. An estimate of the number of vessels laid up idle and waiting for cargoes on the northeast coast of England made recently placed the total at 700.

Prevailing conditions therefore, retard rather than augment both foreign and home trade. Exports show a decrease in volume and the restricted export policy adopted by iron and steel manufacturers gives no hope that the requirements of intending foreign purchasers are likely to be considered as they should be. While small shipments are being made to the allies at 5 shillings ($0.95) per ton above home prices, neutral buyers would pay much higher rates if they could secure satisfactory deliveries of Cleveland iron which is quoted to home customers £10 17s 6d ($41.40) per ton for No. 3 foundry. France, Belgium and Italy are ready to take any odd lots which it is easier to ship than to put on rail. Small parcels of No. 1 hematite obtainable under these circumstances realize £13 7s 6d ($52.30) and for mixed numbers £13 5s ($52) is obtained. No anxiety is shown by hematite producers to book orders, the business in hand being sufficient to keep them fully occupied for some time. Meanwhile the decision not to increase prices is adhered to. The home consumers' needs come first. Although highly lucrative export business is obtainable, the manufacturers, realizing the acuteness of the iron famine

Sterling, $3.92

at home, have no alternative but to deprive themselves of the tempting offers made on behalf of foreign buyers. A good deal of material is being dealt with for India, the deliveries consisting of sheets, rails and wire.

The oversea deliveries are practically confined to old contracts. New business with oversea customers is virtually taboo and it is believed that until the production at the furnaces exceeds the home demand, these famine conditions will prevail. In all departments exports are less. During May 31,931 tons of pig iron were shipped from Middlesborough including British coastwise cargoes, together with 300 tons of rolled iron and 19,502 tons of finished steel, making a total of $54,602 tons. Of this total, 39,206 tons were delivered to foreign customers and 15,396 tons despatched coastwise. The total tonnage shipped from the port of Middlesborough during May is less by 35,183 tons than was despatched during April. This is the lowest tonnage exported to date this year. Indications point to this low record not being yet on the zero

India continues to head the list of overseas customers. She took 10,342 tons in May, of which 7737 tons were steel compared with 8817 tons for April. A reflection of the financial crisis in Japan may be observed in the drop of exports to that country. In April, 13,109 tons were shipped to Japanese buyers but in May the total thus despatched reached only 3381 tons. The demands of Italy have been met by the shipment of 5321 tons of pig iron and 1042 tons of steel. In April, a tonnage of over 13,800 was exported on Italian contracts. Belgium's decreased receipts are represented by 6584 tons, almost all pig iron, in May compared with 11,157 tons in April. France received 1936 tons of pig iron and 116 tons of steel, the tonnage sent to French ports being less by about 400 tons than the quantity for the month of April. Germany retains a place as a buyer, and took 530 tons of pig iron in May compared with 300 tons in April. A total of 1530 tons has so far this year been despatched to Germany, an amount which like that of other oversea customers, is not likely to increase largely in the immediate future. Among the minor oversea deliveries of British material in May were the following:

	Pig iron gross tons	Steel gross tons
Switzerland	400	
Sweden	600	
Norway	100	
Holland	1961	
Natal	532	
Hong Kong		309
Egypt		616
Cape Colony		867
China		445
Mauritius		460
Victoria		392
N. S. Wales		367
British East Africa		1420

The restrictive practices in vogue have also been applied to supplies to Scotland. Of the 15,396 tons despatched from the Tees in May, mostly pig iron, 9337 tons were sent to the east of Scotland; Wales, the Tyne, and other ports took the remainder of British coastwise business. The total Middlesborough iron and steel delivered coastwise during April reached 24,905 tons.

Transactions in foreign ore have been fewer, but imports have been practically continuous. The total quantity delivered to Middlesborough to the end of May reached 159,621 tons. This is a decrease of 49,778 tons compared with April. Buyers have taken full advantage of the fall in freights and users have fair stocks in hand. Consumers anticipate they will be able to do business on better terms. Ore freights are 27 shillings ($5.30) and the value of best Rubio ore c.i.f. Tees, is 59 shillings ($11.60).

The vessel freights on export iron and steel dispatched from the Tees at this time are firm. Australian freight is 60 shillings ($11.75); to Japan 65 shillings ($12.75); to China (Hong Kong) 65 shillings ($12.75); and to Straits Settlements 62 shillings 6 pence ($12.25). All these quotations are plus 10 per cent C. T.

Germany Ships More Coal to Belgium

European Staff Correspondence

BRUSSELS, June 13.—The Belgian iron and steel market shows signs of steady progression towards stability. Metallurgical production in all lines is increasing.

Franc—$0.08

Prices are holding even. Furthermore there is a tendency toward a lowering of prices just as soon as order books can be cleaned up of back deliveries. By that time it is expected that stacks of raw material and fuel will have accumulated to the extent that

production will not be dependent upon hand to mouth supplies. In spite of these tendencies there is no question but that Belgian production costs are continually going upward and the hope is to equalize these by increased production, longer working hours and improved methods of handling the raw and finished product.

Metallurgical coke has risen two to three and five francs a ton, ($0.16 to $0.40), caused by handling charges. Pig iron supplies still are insufficient. Semifinished products are leveling themselves as to prices regardless of quantities or dates of delivery though it is on record that one Liege valley plant has accepted an order for ingots of open hearth steel at 1050 francs per ton ($84.00) for deliveries of 3000 tons monthly for an indeterminate period. Merchant iron and steel output is catching up on the home demand and export orders are being filled at ruling prices, which in general are 50 francs ($4.00) over those for home delivery.

The situation with regard to plates, sheets, tubes and rods is nominally the same as for the past fortnight.

Coal of Belgian extraction for industrial and domestic needs has undergone an advance of three francs ($0.24) per metric ton. This is caused by a 5 per cent increase granted on the miners' wage scale and the reduced production based on the shorter working day. This latter is estimated to have reduced coal production 12 per cent. The price rise in coke is concurrent with that of coal. Transportation conditions are continually improving, actual operation being but 10 per cent under that of before the war. Belgium received 24,000 tons of German coke in May and some 40,000 odd tons of coking coal from the same source.

The sale of 7500 tons of billets at 120 francs ($10.60) per 100 kilos (220 pounds) is reported. This price has been quoted for some weeks past, but as a general thing meant little, as nothing could be obtained. At that, this price is 225 francs ($19.87) per ton higher than in France. If the increase which is to be brought about in France by the addition of a sum to cover the advance in freight rates on raw materials is taken into consideration the two quotations vary little.

French Prices Are Undergoing Advance

European Staff Correspondence

PARIS, June 13.—French iron and steel prices are in an unsettled state at the moment due to the inability of producers to establish a fixed scale based upon the recent advance in freight charges on raw materials and finished products. This increase added at the source will ultimately carry all along the line. As it looks now, for finished products, this may be anywhere in the neighborhood of 50 francs a ton ($3.78) increase, perhaps more. The Comptoir de Longwy immediately raised its pig iron product 10 francs ($0.76) and the hematite combination made a rise of 15 francs ($1.03). The method employed for arriving at results is manifestly unsatisfactory but it is impossible for producers to fix any other basis at the moment.

Coal Supplies Limit Production

With coal shortages still affecting pig iron production in France there has been imported recently small lots of Belgian 3 per cent silicon iron at 1020 francs ($77.21) and one quotation of low grade Luxemburg product was made at 92 francs ($69.68). Only the pressing need of this product by foundries which could not find ready supplies in France made this importation possible since the prices quoted are from 300 to 400 franc ($22.71 to $30.28) higher than French varieties.

The Comptoir des Toles has issued the following statement covering its prospective advances:

"We had thought that a decision as to price revision might be taken before the end of May but the elaboration of newly imposed conditions

Franc—$0.0757

is a long and difficult procedure in view of arriving at a just estimation of the prime costs of metallurgical elements. In consequence the question is still under investigation and it is not possible as yet to put an evaluation as to the increased charges which consumers will perforce have to bear with respect to iron and steel products as a result of the increased expenses of transport of raw materials between their place of production and the plants which ultimately work them up into finished forms."

French foundries have been having difficulty in procuring French, Belgian or German coke in sufficient quantities owing to government "controlled" distribution. There is however "free trading" in coke of British origin—when it can be got of English shippers. Rough castings in series readily bring 200 francs ($15.14) per 100 kilos (220 pounds) with advances running as high as 100 per cent for single castings. Rods for bolt manufacture, command up to 180 francs ($13.63) the 100 kilos (220 pounds) which has brought a 25 per cent increase in the scale prices of bolts and nuts.

German coal and coke shipments to France from August to May 30 already show a deficit of 3,560,000 tons below the treaty agreement. Meantime France is shipping iron ore from her Normandy deposits and from Lorraine to Germany on quasi-private account in an effort to secure additional quantities of coal in exchange. A similar movement in the exchange of the minette ores of Lorraine for British east coast coal has been discussed. It is curious to note that these Lorraine ores are being shipped to England down the Rhine and through the port of Rotterdam instead of being brought across France.

Finished steel products in small lots were sold in the last part of May as high as 150 francs ($11.55) per 100 kilos (220 pounds) a rise of 5 francs (38 cents) over the base prices which are supposed to rule. It is evident that both large and small consumers will have to pay henceforth what ever may be asked, if they are desirous of getting delivery from stock, the alternative being the booking of orders for future delivery with no way of knowing when these deliveries will be made.

An encouraging note is that the Longwy-Bas plant of Sennelle-Maubege is reconstituting all its facilities of before the war. In the aggregate its equipment will be of great aid to the famous Longwy comptoir, or exchange, when in full operation, consisting of five blast furnaces, five converters of 20 tons, blooming mills and plate and shape mills. There are 2000 workers already employed.

Not Pig Iron Firm

No connection of any kind exists between the well-known pig iron house of Rogers, Brown & Co., Cincinnati, with the firm of Rogers, Brown & Co., Inc., Seattle, for which a receiver recently was named. The latter is a dealer in vegetable oils. The firm names are so similar that this fact has occasioned some comment.

A. S. T. M. Holds Busy Sessions

Standard and Tentative Specifications Covering Many Materials Are Considered — Action on Sulphur Clause Deferred—Shattered Zones in Steel Rails Is Subject of Much Discussion—Describe New Testing Apparatus

STANDARD and tentative specifications for many materials ranging from steel and alloys to textiles and cement were submitted, revised or adopted at the twenty-third annual meeting of the American Society for Testing Materials held at Asbury Park, N. J., June 22-25. The reports of the various committees, particularly A-1 on steel, reflected not only good organization and efficient supervision, but also painstaking co-ordination of the detailed information in the reports. That the work of each committee was performed conscientiously and satisfactorily was evidenced by the fact that although representatives of producers, sellers and consumers of the materials involved, as well as professional men, were present prepared to criticize any flaw in the reports, the proposals of the committees met with but little opposition.

Perhaps the most important committee report was that on the specifications for steel. Eleven standards and five tentative standards were revised, a new tentative standard for commercial steel bars was proposed, and it was decided to defer action upon the note which raised the rejection limits for sulphur in all steels and for phosphorus in acid steels 0.01 per cent above the values in the specifications.

Many important papers were presented during the convention. Of these, the one dealing with shattered zones in steel rails attracted much attention and was the object of a lively discussion. A number of papers describing testing apparatus were presented in a special session devoted to testing equipment. The corrosion of steel, making power forged navy chain cable, action of steel during rolling process, properties of nonferrous alloys, refractories, and several other subjects were covered in well written papers.

The names of the officers elected for the coming year, as well as an abstract of the annual address of the president appeared in last week's issue of THE IRON TRADE REVIEW. The report of the secretary-treasurer, C. L. Warwick, showed that the society has a membership of 2754. At the Wednesday evening session, President Capp gave a report of the meeting of representatives of engineering societies at Washington, June 3 and 4, when steps were taken to organize a national engineering body. He stated that the executive committee of the testing society is now giving thought to the subject and will issue a statement at an early date regarding the arrangements which will be made.

The attendance at the meeting was 657 members and guests and 143 ladies. Among the entertainment features was an informal smoker and dance Tuesday evening and the annual golf tournament, which has become an established institution. Clarence Hall, bureau of mines, Washington, received the society's championship cup for making the lowest gross score. Medals for the lowest net score were awarded to H. L. Sherman, industrial chemist, Boston; E. D. Boyer, Atlas Portland Cement Co., New York; and F. G. Breyer, New Jersey Zinc Co., Palmerton, Pa. Wednesday afternoon the ladies were given a boat ride on Deal lake.

Authorizes Changes in Steel Specifications

MANUFACTURERS and users of steel manifested unusual interest in the report of committee *A*-1 on specifications for steel. In former years the recommendations of this committee usually brought out considerable discussion, but owing to the thorough way in which the report this year had been worked out in committee and to the better understanding which is being established between manufacturers and users it was accepted with practically no discussion. The committee consists of 123 members representing producers and consumers and is divided into many subcommittees covering practically every branch of the steel industry.

Recommend Changes

The revisions in A. S. T. M. standards for steel may be summarized as follows:

Quenched high carbon steel splice bars.—Change section 11 to read as follows by adding the italicized words and omitting the words in brackets:

"If the results of the physical tests of any test lot do not conform to the requirements specified (the manufacturer may retreat such lot one or more times and retests shall be made as specified in Section 10) **two additional tension and two additional bend tests shall be made from such lot all of which shall conform to the requirements specified.**"

Quenched carbon steel track bolts.—Section 11, describing the form, dimensions, variations, manner of fit, etc., of bolts and nuts, has been altered.

Quenched alloy steel track bolts.—Changes are as in the preceding specification.

Steel screw spikes.—In section 7 change the fifth sentence to read as follows by omitting the words in brackets:

"A variation of $\frac{1}{32}$ inch over (and under) the specified diameter of the unthreaded portion of the body of the spike will be permitted."

Structural steel for locomotives.—In section 6 add the following:

"Plates $\frac{5}{16}$ inch or under in thickness shall not be subject to tension tests."

Structural steel for cars.—Add sentence as in preceding case.

Structural steel for bridges, structural nickel steel, structural steel for buildings, structural steel for locomotives, structural steel for cars, structural steel for ships and boiler and firebox steel for locomotives.—In each of the foregoing specifications make the following revisions in the tables of permissible variations of plates ordered to weight and thickness: Change the column heading "132 inches and over" to read "132 to 144 inches inclusive" and add this note:

"The permissible variations for all plates over 144 inches in width shall be agreed upon by the manufacturer and the purchaser."

Structural steel for bridges, structural nickel steel, structural steel for buildings, structural steel for cars, rivet steel for ships, boiler rivet steel.—Revise each of the foregoing specifications by inserting the provision that

"Tension and bend test specimens for rivet bars

which have been cold drawn shall be normalized before testing."

Lap-welded and seamless steel boiler tubes for locomotives.—In section 6 omit the word "small" before "tubes" in paragraphs *a* and *b*. In paragraph *a* omit the comma after the word "pipes." In section 14 *a*, change from its present form, namely

"The finished tubes shall be circular within 0.02 inch, and the mean outside diameter shall not vary more than 0.015 inch from the size ordered."

to read as follows:

"Finished tubes 3½ inches or under in outside diameter shall be circular within 0.02 inch and the mean outside diameter shall not vary more than 0.015 inch from the size ordered. For tubes over 3½ inches in outside diameter these variations shall not exceed 0.5 per cent of the outside diameter."

Welded steel pipe.—The specification has been rewritten, the most important change being the addition of a requirement for open-hearth steel pipe. Sections 2*a*, 2*b* and 17 have been omitted, section 1 modified and sections 15*a* and *b* combined.

Automobile carbon and alloy steels.—Change the permissible range in chromium in the first three classes in table IV on automobile chromium steels from 0.65 to 0.85 to 0.60 to 0.90 per cent, leaving the desired chromium 0.75 per cent as before. Omit the fourth, fifth and seventh classes in the table and substitute therefor the following fully representative type of oil quenching chromium steel:

	Desired	Permissible Range
Carbon	1.00	0.95-1.10
Manganese	0.35	0.20-0.50
Phosphorus		Not over 0.03
Sulphur		Not over 0.03
Chromium	1.35	1.20-1.50

Recommendations were made for revising the tentative specifications for steel tire plates, low carbon steel track bolts, steel plates for forge welding, carbon tool steel, and electric cast steel anchor chain. All of these specifications were continued as tentative for another year as was also the specification for boiler and firebox steel for stationary service. A new specification for commercial bar steel was accepted for publication as tentative.

Sulphur Allowance Retained

The report announced the formation of a joint committee on steel castings for railroads, consisting of representatives of the American Society for Testing Materials, the mechanical section of the American Railroad association, and the United States railroad administration. It is expected that this committee will submit specifications to the society at the next annual meeting.

The removal of the increased allowance of 0.01 per cent of sulphur in all steels and of phosphorus in acid steels, which had been continued last year in 14 of the 43 specifications to which it had been added by action of the society in 1918, was deferred until next year. This was decided upon because it was thought that the conditions which required this increase in 1918 still exist. The specifications in which this increased allowance for sulphur and phosphorus is to be continued are those for carbon-steel rails, low-carbon steel splice bars, structural steel for buildings, structural steel for locomotives, structural steel for cars, structural steel for ships, rivet steel for ships, billet steel concrete reinforced bars, steel castings, lap-welded and seamless steel boiler tubes for locomotives, lap-welded and seamless steel and wrought iron boiler tubes for stationary service, and iron and steel chain. This allowance was also left in tentative specifications for steel tie plates, and for low-carbon steel track bolts.

The advisory committee of committee *A*-1 recommended to the executive committee that the following specifications be submitted to the American Engineering Standards committee for approval as American standards: Carbon steel and alloy steel blooms; billets and slabs for forgings; carbon steel and alloy steel forgings; quenched and tempered carbon steel axles, shafts and other forgings for locomotives and cars; quenched and tempered alloy steel axles, shafts, and other forgings for locomotives and cars; carbon steel forging for locomotives; carbon steel car and tender axles; cold rolled steel axles; and cold drawn bessemer steel automatic screw stock.

Discuss Shattered Zones in Steel Rails

THAT interest in the problem of improving the quality of steel rails is unabated, even though the subject has played an important part in the programs of the society for many years, was demonstrated by the lively discussion which followed the presentation of James E. Howard's paper on "Shattered Zones in Certain Steel Rails, with Notes on the Interior Origin of Transverse Fissures." More than usual emphasis was placed upon the importance of the subject due to the dependence of human life on the stability of steel rails. Mr. Howard's paper appears on page 25 of this issue.

Robert Job stated that no change had recently been made in the manufacture of steel rails solely for the purpose of bettering the product, but that all changes which had been made were primarily to increase tonnage capacity. Among these changes was that of reheating the blooms, which was a benefit to both the producer and to the consumer. He urged that the mills make an effort to better the product and not leave this study entirely to the railroads. The present method of inspection were criticized by Mr. Job as being inadequate and he proposed that a rail from each ingot be tested to insure that no brittle rails pass inspection and get into service.

Predicts Change in Material

Improvement of the product was also insisted upon by Max H. Wickhorst, engineer of tests, American Railroad association. He predicted that rails will ultimately be made of steel of the grade of spring steel in order to meet the constantly increasing weight of railroad equipment.

A written discussion submitted by George F. Comstock cited the fact the production of exfoliation illustrated in Mr. Howard's paper shows a rail that has been in service and the paper does not state whether this phenomenon was also found in new rails. He said, if new rails are also exfoliated by quenching, this fact cannot be held to support the theory of thermal origin of the shattering cracks. In suggesting the decarbonizing method for showing the shattered condition, the author must feel that slow cooling from the decarbonizing temperature does not cause the internal cracks which are being sought. However, he states that the rapid cooling causes rupture from the exterior, or exfoliation. Why then should an intermediate rate of cooling produce an entirely different kind of cracking. Another point on which more information from the author would be desirable is in regard to the frequency with which the shattered condition is met in new rails. What proportion of the new rails examined showed shattered interiors, and why do not nearly all of them show this defect if it is merely a question of thermal effect?"

Raymond W. Woodward, read a written discussion prepared by Henry S. Rawdon, physicist, United States bureau of standards, Washington. In this paper, Mr. Rawdon states that it is particularly desirable, in the case of fractures, that the face of the break be examined before it has been attacked in any way by etching

reagents, submitted to oxidation or other changes accompanying heating, or in any way treated so that its characteristic features are changed, and thus a certain degree of uncertainty introduced. The method of decarburization described by Mr. Howard, he continues, has the same disadvantage as that attributed to the location of the defects by deep-etching. The defect after it has been located, cannot be examined in its initial and unchanged condition.

Describes Deep Etching

Mr. Rawdon next refers to the deep etching of steel, which he declares is much simpler in application and does not change the metal in any way. He outlines the method as follows:

"The section for examination should be polished as for microscopic examination, magnetized, and then bathed in a light oil in which very fine iron dust is in suspension. Kerosene is suitable as a liquid and the *mud* from cast-iron lapping disks answers for the iron dust. The specimen is finally washed in clear kerosene, care being taken that the polished face of the specimen is not touched. No particular skill of manipulation is required for carrying out the operation.

"After the defects are located, their positions may be permanently marked by a punch mark at each end of the crack. The specimen may then be cut into pieces of suitable size and each broken by a transverse bend along the line of the located defect. It is also possible by rather deep punch marks to open up the metal along the line of the defect before the specimen is broken. In every case which has come under the observation of the writer the face of the internal fracture revealed after breaking the specimen at the spot where the defect was located was identical in appearance with that of the usual *nucleus* of a transverse fissure. It is believed that the method can be used to advantage to throw further light on the probability of such an internal fracture serving as the *nucleus* or starting point for the development of a transverse fissure.

"If all incipient transverse fissures, even in their very earliest stages, are associated with a *nucleus* which is identical in its characteristics with the internal fractures of *shattered steel*, one is led to the conclusion that the *nucleus* existed as a discontinuity in the metal before the growth of the fissure began.

"Regarding the statement by the author that 'there seems to be no inconsistency in believing that brittleness may be displayed by hot as well as by cold steel through the action of—strains—'it would appear to the writer that such brittleness ought to reveal itself if the metal is tested in a suitable manner while hot."

Mr. Rawdon states that brittleness in hot steel is usually associated with red-shortness or similar phenomena, due to high sulphur content and to certain additional elements which form a eutectic solidifying at a fairly low temperature. However, he asserts, the brittleness referred to here is of a different type and is supposed to concur in normal steel. If steel is brittle at any stage during its heating or cooling, this property should be revealed by a suitable method of treating, preferably some form of the notched-bar impact test.

Mr. Rawdon next explains a graphic chart showing the characteristic behavior of a steel of 0.5 per cent carbon when tested at different temperatures by means of the notched-bar impact test.

In conclusion, the author states:

"It is not clear to the writer how the author reconciles the idea expressed as to the possible retarding action of an internal zone of shattered metal upon the formation of transverse fissures 'by a diffusive action—within the shattered zone, relieving the intensity of the internal strains * * *' with the statement that 'well-advanced transverse fissures have been found in close proximity to each other, in some cases barely an inch apart.' It would seem logical to infer that if several incipient transverse fissures form in close proximity to each other, the diffusive action referred to should be sufficient to prevent further development so that well-developed transverse fissures ought never to occur in close proximity to one another."

Says Abuse Causes Failure

The technical and theoretical nature of the paper and of the discussion was deprecated by J. J. Cone, Robert W. Hunt & Co., who said that he had been connected with the inspection of rails since 1880, and soon had found that nine-tenths of the transverse fissuses in rails are caused by abuse of the rail in the operation of straightening in the press. The other tenth was said to be due to porous and unhomogeneous metal.

Describe Modern Apparatus for Testing

A HIGH-SPEED, alternating, torsion testing machine, developed at the United States naval engineering experiment station some years ago, but since improved, was described in a paper by D. J. McAdam Jr. This machine is designed for applying alternating torsional stresses to a test specimen by means of the inertia of a fly wheel which may be caused to oscillate through any desired angle. The stress thus applied is proportional to the moment of inertia of the fly wheel, to the angle through which the fly wheel oscillates and to the square of the frequency of oscillation. By means of a beam of light reflected from a mirror attached to the fly wheel, the angle of oscillation is accurately measured. A speed of 1200 revolutions per minute has been used in tests with this machine.

A recorder which can be attached to any standard testing machine without decreasing its accuracy in any way, and which may be used for determining the elastic limit rapidly enough for commercial testing, was described by C. H. Marshall. This device is applied by mounting on the poise of the testing machine a card having graduations corresponding to the beam. This card moves in a horizontal direction in front of a punching device which is caused to move vertically at a speed proportional to the elongation as shown by an extensometer attached to the test specimen. The record made is in the form of a series of punch marks which are the points for a stress-strain curve. These points are joined by a line drawn in by hand and the elastic limit determine on this curve. If desired, two or more cards may be placed in the machine and records made simultaneously. J. L. Jones, in discussing Mr. Marshall's paper, stated that the American Steel Foundries had installed one of these recorders and would use it for carrying on several investigations for the American Society for Testing Materials.

A new method of calibrating Brinell hardness testing machines was described by J. L. Jones and C. H. Marshall. For the purpose of calibrating discussing this paper, H. M. Bolyston reported that the method described was a simple one and that he found it successful in disposing of discrepancies. T. Y. Olsen stated that Brinell machines are made with check weights which readily may be employed in calibrating the machines. In reply to a question by Mr. Jones as to the accuracy of a 3000-kilogram machine, Mr. Olsen stated that, on using the check weights the beam must float, and the accuracy is within five pounds.

A ductility testing machine for weighing the pressure required to cause cupping when testing sheet metal was described in an important paper by T. Y. Olsen. To demonstrate the value and need of weighing the pressure in a sheet metal cupping test, Mr. Olsen recounted a recent experience. "Two supposedly similar

samples of sheet steel of different makes were subjected to test," he said. "The amount of cupping to point of fracture was practically the same but the pressure to cup the one steel was twice that of the other. The test, without weighing the pressure, would pass both lots of material. But the work of drawing or the power consumed in producing a given distortion in one case would be double that in the other. The strain on the presses also would be double, possibly sufficient to injure them if they were running close to capacity on the low-pressure steel. Such a possible breakdown might be avoided entirely by a test for ductility based on the load required for cupping." In discussing this paper, W. B. Price described a machine developed at the laboratory of the Scoville Mfg. Co., Waterbury, Conn., in November, 1918, and built in 1919, which is exactly similar in principle to that described by Mr. Olsen, and which differs only in a slight detail. Mr. Price endorsed the value of this machine and said it is of value especially in testing cupro-nickel.

An apparatus designed to test the thin, tempered, strip steel shims used in flexible couplings was described in a paper by W. J. Francke.

Papers Cover Wide Range of Subjects

EXPERIMENTAL results showing that a given amount of reduction by rolling produces less residual stress in the metal if it is brought about by a large number of light drafts than if by a smaller number of heavy ones, are given in a paper by Henry M. Howe and Edward C. Groesbeck. This paper which was summarized by Mr. Warwick in the absence of Professor Howe, appeared in the June 24 issue of THE IRON TRADE REVIEW.

G. W. Sargent presented a large amount of data covering tests made on structural steel containing molybdenum, together with a number of micrographs showing the structure of the steel under various heat treatments.

Tensile Properties of Malleable

Data on the effect of machining and of cross-section on the tensile properties of malleable cast iron is given in a paper prepared by H. A. Swartz, National Malleable Castings Co., Indianapolis. These data show that the ultimate strength and elongation decrease with increased diameter of section. Cable chain is discussed in a paper by C. G. Lutts, who said that without heat treatment power-forged wrought iron chain is unreliable, but with proper heat treatment the same chain is made reliable and uniform in its physical properties. Stud chain was said to have a definite yield point at about one-third of its breaking load. The paper was published in the June 24 issue of THE IRON TRADE REVIEW. That hand-forged chain used on the Panama canal did not always meet specifications and sometimes failed in service, while power-forged chain met the requirements of the specifications was stated by Henry Goldmark. He called attention to the fact that the strength of a chain depends mainly upon the quality of the weld and that some heavy chains would not stand as much service as a lighter chain, due to defective welding. He had found stud chain to be better than open-link chain.

A new method of testing galvanized coating, by which the sample is not destroyed, was described by Allerton S. Cushman. This method is based upon the measurement of the amount of hydrogen generated when a sample of a definite area is subjected to the action of concentrated hydrochloric acid to which a small amount of antimony chloride has been added. Apparatus has been devised for covering a portion of the sample with a tinned iron ring. This ring is closed at the one end by a soft rubber stopper, thereby making a cell into which the acid solution can be run. The evolved hydrogen is carried to a measuring burette by means of a tube controlled by a three-way stop cock. A tight contact is preserved between the bottom of the metallic ring and the galvanized surface by a plastic molding clay placed around the joint. The chief advantage of the method is that galvanized culverts or other galvanized objects may be tested without destroying the sample. They may be tested at different spots and the test can be carried on after the culvert is installed if desired. Spots made by the acid may be regalvanized or painted to preserve the steel. The results of Mr. Cushman's investigations show the method to be accurate and to give concordant results.

The tables of weights, dimensions and test pressures for standard and extra strong pipe in the standard specifications for welded wrought iron pipe were reported by committee *A-2* on wrought iron to have been extended to include sizes from 6 to 12-inch, the latter being the present limit of commercial sizes. Definitions for such words as puddling, busheling, fagoting, etc., were formulated by the committee and adopted by the society in the form of tentative definitions. These will come before the committee next year for adoption as standard.

As the bureau of standards has recently standardized screens, committees *D-6*, on coke, and *D-3*, on methods of sampling and analysis of coal have changed their standards to use the new standard sieves in place of the sieves formerly required. At the meeting on Thursday afternoon, committee *D-10*, on shipping containers, proposed a tentative general specifiation for wooden boxes, nailed and lock-cornered construction, which will be presented to the society for adoption by letter ballot.

The lack of an adequate definition of plasticity, which can be applied to clay lime and other materials, received some attention at the session on preservative coatings and lubricants. It was pointed out that the present understanding of plasticity varies for the various materials and it is likely that this question shortly will be brought to the attention of the proper committee of the society. The session on preservative coatings and lubricants brought out a description by R. L. Hallett, of a new instrument for measuring the hiding power of paints, a paper by Henry Green on the further development of the plastometer, a description by A. H. Pfund of a new colorimeter for white pigments, the acceptance of revisions in the standard specifications for raw tung oil, the acceptance of tentative specifications for turpentine, the acceptance of a new test for linseed oil, the acceptance of emulsification tests, the acceptance of a method of sulphur determination in lubricating oils and the acceptance of a revision of the tentative test for viscosity of lubricants.

Report on Refractories

Results of the year's work of committee *C-8* on refractories was shown in the report of the committtee given by A. V. Bleininger, chairman. At the recommendation of the committee the following tentative specifications will be submitted to the society to be adopted by letter ballot as standard: Tentative test for determining the softening point of fire clay brick; tentative method for the ultimate chemical analysis of refractory material; tentative test for determination of porosity and permanent volume changes in refractory materials; tentative test for refractory materials under load at high temperatures; and tentative definitions of clay refractories.

Studying Failure of Steel Rails

Shattered Zones Are Found Along Middle of Head and at Junction of Web and Base and Are Thought To Form After Last Pass in Rolls—Cold Rolling Action of Wheels

BY JAMES E. HOWARD

IN EXAMINING metal to ascertain whether a shattered state exists in a given case, the method of pickling in hot acid is one of the most expeditious. For a critical examination of the steel, the pickling should be of short duration or give way to some other method. A provisional method which has been used to advantage is to decarburize the steel. The metal having been planed off to the depth of the shattered zone and then decarburized, a thin layer of the surface metal is removed, whereupon the decarburized walls of the cracks are visible to the unaided eye, picric acid having been used to bring about differentiation in color.

Shattering cracks may be located by polishing only, without etching, although tincture of iodine or copper-ammonium chloride increases their visibility. The polishing is carried out with this particular object in view and not to produce the usual high polish for general metallographic purposes. These two methods, decarburizing and polishing without etching, we owe to R. H. Christ, metallographist of the Bethlehem Steel Co.

Filings Reveal Cracks

The presence of a fine crack is often revealed by steel filings gathering at the crack. Fig. 1 shows the appearance of a rail section upon which fine dust from a hack saw gathered, the polarized particles forming a fringe one inch long in places. This rail section furnishes an extreme example of its kind. Under the most careful manipulation in draw-filing, the fine steel dust which will collect may be arrested and will disclose the presence of a fine crack. There is comparatively little trouble in locating cracks once the knack is acquired.

It appears to have been conclusively established that no inclusion exists between the walls of these cracks, while it was early shown that they existed in the steel before being subjected to any of the exigencies of service. The questions are: When do these shattering cracks have their origin; what are the temperatures involved, since they now appear as thermal effects; and what is the influence of chemical composition and the shapes and dimensions of the members displaying these cracks?

In steel rails the zones in which the cracks appear are located along the middle of the interior of the head and at the junction of the web and base. Those in the base have attracted little or no attention, since base failures of rails have not been associated with these cracks. Fig. 4 depicts the shattered zones in a rail. The upper figure represents a horizontal, longitudinal surface along the middle of the head; the lower figure is a vertical, longitudinal section through the head, web and base. The shattered metal constitutes an interior zone in each case. A wall of considerable thickness encloses each zone.

Status of Data on Shattered Metal

Progress in the study of shattered metal and its present status so far as it has come to the knowledge of the writer may be summed up as follows: Shattered zones are interior manifestations, being surrounded with walls of unshattered metal. The shattering cracks in rails are located along the middle of the head and at the junction of the web and base. The cracks themselves are of appreciable size in two directions but in their third dimension are very minute. The minimum distance separating their walls is probably much less than 0.00002 inch. No foreign inclusion is contained in the cracks. They both follow grain boundaries and pass through the grains of the steel. They are not associated with other structural defects, nor peculiar to segregated areas, except in so far as they are prevalent in the harder grades of steel. The softer grades of steel so far as present observations have covered the subject are free from shattered metal. The shattering cracks appear to be of thermal origin; that is, they are cooling or shrinkage cracks. They are acquired presumably after the last pass in the rail mill. The hot-sawed ends of rails have been found unshattered. The cracks occupy zones in the section of the rails which upon cooling acquire a state of initial tension, and have not been found in those parts which are left in a final state of compression. Experimental treatment has shown a susceptibility to display similar cracks in rails

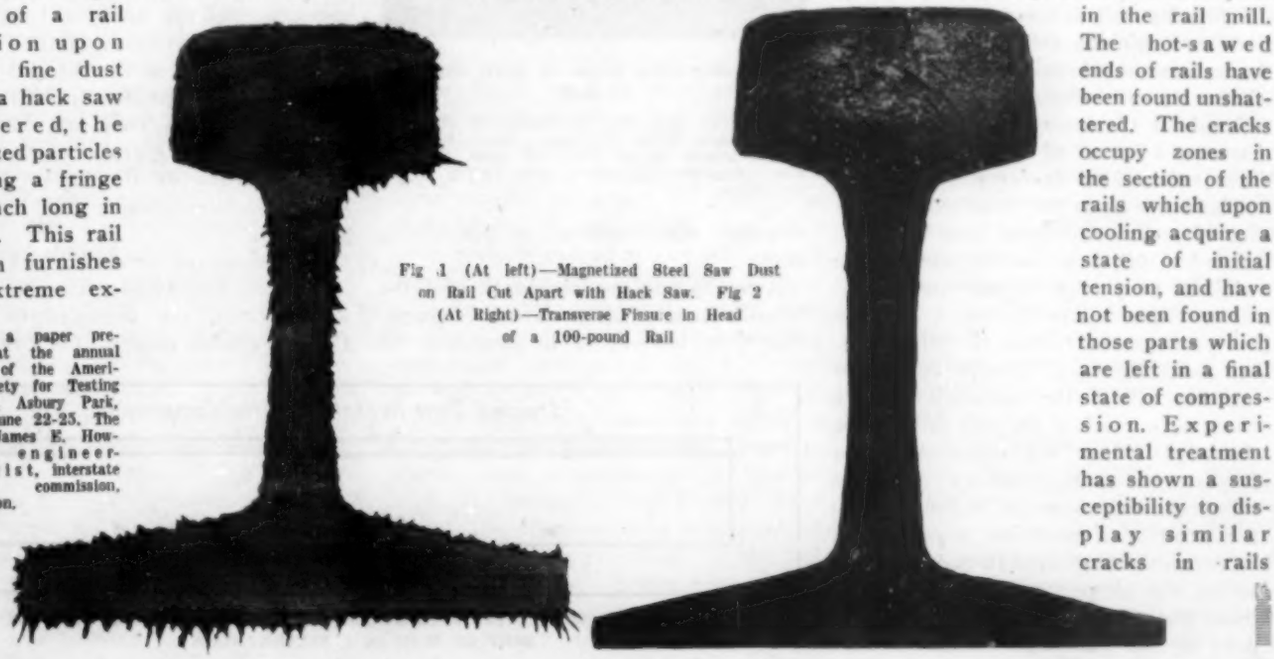


Fig. 1 (At left)—Magnetized Steel Saw Dust on Rail Cut Apart with Hack Saw. Fig. 2 (At Right)—Transverse Fissure in Head of a 100-pound Rail

From a paper presented at the annual meeting of the American Society for Testing Materials, Asbury Park, N. J., June 22-25. The author, James E. Howard, is engineer-physicist, interstate commerce commission, Washington.

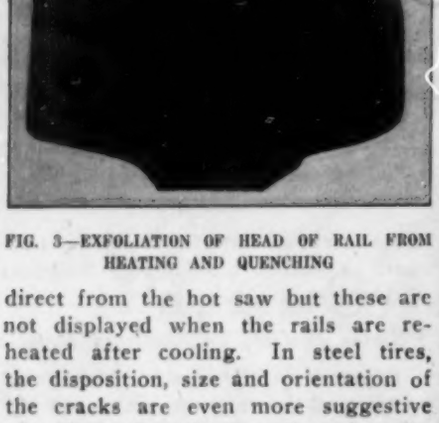


FIG. 3—EXFOLIATION OF HEAD OF RAIL FROM HEATING AND QUENCHING

direct from the hot saw but these are not displayed when the rails are reheated after cooling. In steel tires, the disposition, size and orientation of the cracks are even more suggestive of a thermal origin than those in rails.

Quoting from a current report of the bureau of safety of the interstate commerce commission on an accident attended with loss of life caused by a transverse fissured rail: "It is important to consider whether there are any means of escape from the tendencies which lead to the formation of transverse fissures. In respect to the cold-rolling action of the wheels there are none. The utmost which may be accomplished is to preserve a relation between the ability of the steel to endure these unavoidable strains and the service conditions which are responsible for them, to the end that the ultimate endurance shall not be reached while the rail is in the track * * * Rails cannot be included in the group of engineering structures which are classified as permanent ones. It is the method of carrying loads upon wheels, the very essence of land transportation, which excludes rails from the group of permanent structures."

The introduction of remedial measures or the adoption of means for eliminating rail failures is retarded so long as confusion exists respecting the basic causes of rail failures. More than a score of explanations have been offered for the formation of transverse fissures. Some of the explanations have referred to features which have an influence upon the primitive properties of the steel; others have been advanced which bear no relation to the original properties or service conditions. Rail failure statistics, for the five-year period ending in 1918, number about 21,000 rail failures, representing not all of the railroads of the country, nor all of the rail failures on the roads which are reported. In a 10-year period the number of failed rails reported exceeded 50,000. As in the practice of medicine, a case must be correctly diagnosed in order to prescribe the proper treatment. But in these instances the failures, as they appear in the published statistics, were not diagnosed. So many cases only were reported, said to be located in certain portions of the individual rails, or even less explicitly designated merely as "broken rails." This is not a matter mentioned in the spirit of adverse criticism but in one of regret, since it is felt that the best use of existing opportunities is not being made.

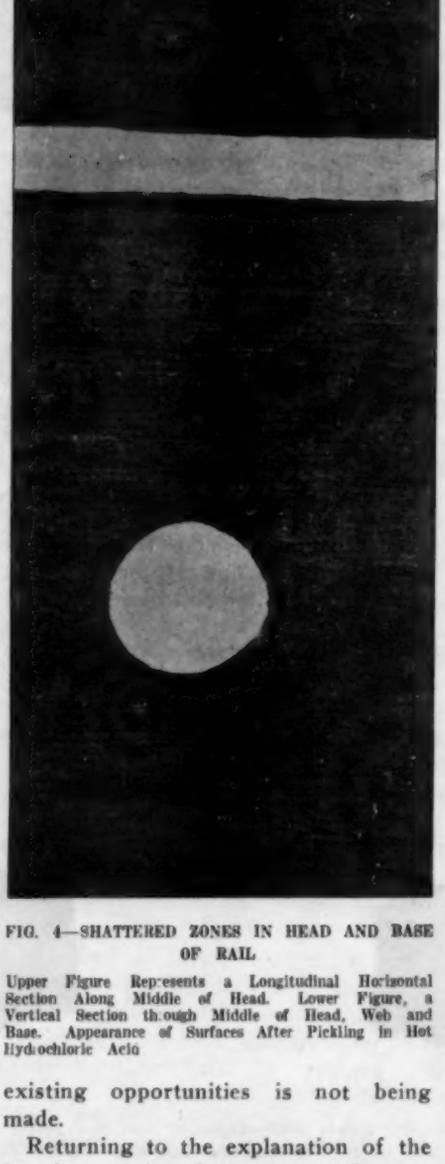


FIG. 4—SHATTERED ZONES IN HEAD AND BASE OF RAIL

Upper Figure Represents a Longitudinal Horizontal Section Along Middle of Head. Lower Figure, a Vertical Section through Middle of Head, Web and Base. Appearance of Surfaces After Pickling in Hot Hydrochloric Acid

Returning to the explanation of the interior origin of transverse fissures, Fig. 2 is introduced to illustrate the appearance of a fracture of this type. In the different stages of development they are found in all sizes. They are commonly located on the gage side of the head or over the web. Among 663 fissures which occurred on one railroad, 535 occurred on the gage side of the head, 128 over the web, and none on the outside of the head.

Fig. 5 represents a hypothetical beam, the upper shaded zone of which is assumed to be held in a state of initial compression by an external force. Detached and unrestrained, it would assume the dotted length. The failure of this hypothetical beam under repeated bending stresses, if it occurred on that side, would be expected to take place below the zone of initial compression, that is at an interior element. Were the zone of metal in compression not maintained in that state by an external force, then its reaction would put strains of tension in the interior metal, augmenting those due to the direct bending stresses applied to the beam, increasing the intensity of the latter. The influence of the metal in compression in a rail is not confined to any one part of its length, but extends along the entire top of the head from one end to the other. Its influence in promoting rupture will be felt in all parts of the length of the rail. A transverse fissure has been found 1⅛-inch from the end of the rail, a location where internal strains were not only the dominant ones but practically the only ones present.

The extent to which these internal strains are realized in rails which have been in service is illustrated in Fig. 6. Internal stresses of compression amounting to 20,000 pounds per square inch are not infrequently found in the upper part of the heads of rails which have been in service, together with a state of tension in the interior of the head ranging from 5000 to 8000 pounds per square inch. They are chiefly due to the cold rolling action of the wheels on the heads of the rails. Cooling strains of fabrication are of lesser degree.

The measured strains which Fig. 6 illustrates, converted into corresponding stresses, are conservative rather than maximum values. They represent

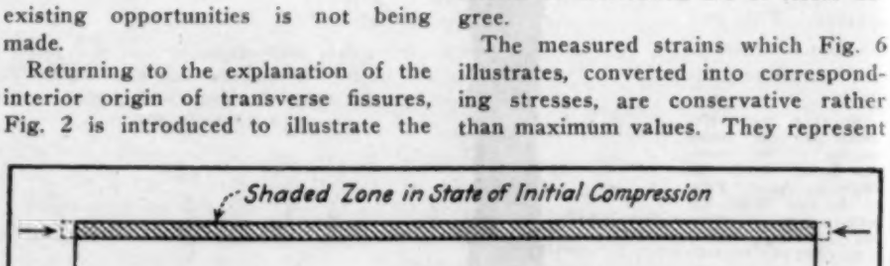


FIG. 5—HYPOTHETICAL BEAM, UPPER ZONE ASSUMED TO BE IN A STATE OF INITIAL COMPRESSION, BODY OF BEAM IN A NEUTRAL STATE

average values distributed over the length of the rail, measured on strips in which the strains vary at different depths of cross-section. It is clear that a wedge action of the metal adjacent to the running surface must be exerted upon the metal next below, taking place along the entire length of the rail. This action seems adequate to account for the presence of incipient transverse fissures which are frequently found at short intervals along the length of the rail. In fact, well advanced transverse fissures have been found in close proximity to each other, in some cases barely an inch apart, a development which could not take place as the result of bending stresses alone.

Prolonging Lives of Rails

Efforts to prolong the lives of rails have been carried out in two directions; namely, increasing the chemical hardness of the steel, and increasing the cross-section of the rails. Immunity against rupture has not been attained by either method. The failure of rails goes on conspicuously on trunk lines where tonnage is greatest. There are other railroads which seldom have rail failures. The problem is not to produce a rail which will successfully meet traffic conditions on some railroads only, but to produce one which will retain a margin in safety on all, including those roads where present traffic conditions are most severe. The expression "retain a margin in safety" has been applied to this qualification. Primitive strength is not the sole consideration. That alone may be attained. The real problem is one of endurance against track conditions and stresses without serious impairment of physical properties—to produce a rail which will not be dangerously affected during its term of service in the track whether that term be of long or short duration.

Since the days of wrought-iron rails and the introduction of steel rails there has been a gradual increase in chemical hardness of the metal, which has resulted in rails containing about 1 per cent of carbon. Other hardeners have also been used. Rails of great chemical hardness have the advantage of greater resistance to abrasion and wear. But, referring to Fig. 4, it will be seen that this transverse fissured rail shows no appreciable wear nor change in shape, yet it developed this dangerous type of fracture. Hard rails, therefore, are not immune from transverse fissures.

No high-carbon steel rails have resisted the introduction of internal strains from the cold rolling action of the wheels. Such strains are the result of local stresses which exceed the elastic limit of the metal, whence it follows that all rails in service represent metal which has been strained beyond its elastic limit in some part of its cross-section. Manganese-steel rails eventually succumb to the cold rolling action of the wheels. The toughness

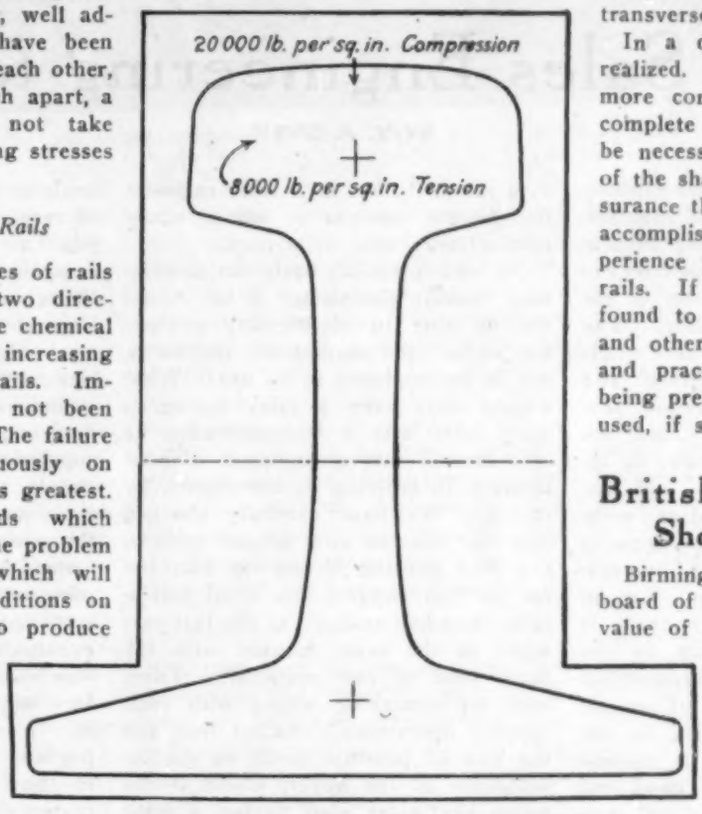


FIG. 6—INTERNAL STRESSES IN HEAD OF RAIL CAUSED BY WHEEL LOADS

Zone Immediately Below the Running Surface of the Head in Compression, Interior of the Head in Tension. (Crosses Indicate Usual Location of Shattered Zones.)

of the metal at the running surface of the head is destroyed, and rupture takes place by the development of crosswise fractures. Unlike transverse fissures in carbon-steel rails, the crosswise fractures in manganese-steel rails have exterior origins. They begin at the running surface of the head, then progressively extend downward through the head, and into the web. It is a peculiarity of manganese steel that toughness is retained in the remaining unruptured portion of the rail; the reverse is true of carbon-steel rails.

The discovery of shattered metal in many rails which displayed transverse fissures gave encouragement for a time that a structural defect had been found, the elimination of which would restore the inherent ability of the rail to endure service stresses with a margin of safety. Not that the elimination of this or any structural defect would render the steel unbreakable, but it would effect such an improvement in resistance that rails would sustain present wheel loads without failure by the development of transverse fissures. The zone of shattered metal which is located in the head of the rail includes the location of the nuclei of transverse fissures. It was therefore quite natural to infer that the elimination of this shattered zone would at least prolong the life of the rail, if indeed it did not completely arrest development of transverse fissures.

In a degree these hopes may be realized. Time and the acquisition of more complete data are required to complete the demonstration. It will be necessary to effect the elimination of the shattered zones and furnish assurance that such elimination has been accomplished, followed by track experience with structurally unshattered rails. If certain grades of steel are found to be susceptible to shattering and other grades are not, an inherent and practically unavoidable tendency being present, such steels may not be used, if shattering is a fatal defect.

British Foreign Trade Shows Great Gain

Birmingham, Eng., June 11.—The board of trade returns show that the value of British imports in May was £166,333,816, which total is £30,721,328 or 22.65 per cent more than the total for the same month last year. Exports of British products for May totaled £119,319,422 an increase of £54,974,790 or 85.43 per cent. For the five months ending with May, 1920, the value of imports was £863,201,689, an increase of £269,107,435, or 45.20 per cent. Exports of British products for the five months totaled £521,114,534, an increase of £250,920,867, or 92.86 per cent. Exports of foreign and colonial merchandise for May were returned at £20,260,078, an increase of £8,764,726, while for the five months the amount was £115,767,120, an increase of £72,296,785.

The following table, from which the exports of foreign and colonial merchandise are omitted, gives a comparison of recent figures with those for 1913:

FIRST FIVE MONTHS

	Imports	Exports
1920.....	£863,201,689	£521,114,534
1919.....	594,094,254	270,193,667
1913.....	320,453,024	214,223,089

The quantity of iron and steel and manufactures thereof exported in May was 326,177 tons, compared with 206,460 tons in May, 1919, while the value was £11,958,241 against £5,-

384,215. For the five months this year the quantity was 1,369,260 tons against 815,109 tons last year, and the value was £46,185,578, against £22,039,504. The quantity of coal exported in May was 2,139,261 tons, against 3,797,076 tons in May, 1919, and in the five months 12,500,925 tons, against 15,304,612 tons.

Exports of iron and steel for the first five months of 1919 and 1920 are shown in detail in the following table:

	1919 Tons	1920 Tons
Pig iron	126,678	307,277
Iron, rods, bars, angles, etc.	14,015	23,477
Steel bars, etc.	99,595	137,104
Hoops and strip	20,418	20,027
Plates, not under ⅛ inch	116,592	77,700
Plates and black sheets	63,695	67,784
Black plates	3,185	17,853
Galvanized sheets	37,294	177,813
Tinned plates and sheets	94,196	148,130
Tubes, cast	24,535	36,347
Tubes, wrought	38,438	45,786
Railway material	67,778	110,829
Wire	6,843	23,294
Wire manufactures	11,763	21,984

Pig iron made the largest gain, showing an improvement of 142 per cent. The only appreciable decrease was made in heavy plates.

The Bethlehem Shipbuilding Corp., Quincy, Mass., turned out a total horsepower of 1,334,800 at its Fore River plant during 1919. There were 47 launchings during the year and a total vessel capacity of 109,082 tons.

Applying Sales Engineering to Pig Iron

BY Y. A. DYER

WITH the higher development and appreciation of engineering talent, large and efficient business enterprises have become the rule rather than the exception in the annals of American industry. The old rule-of-thumb methods have gradually yielded to the analytical and synthetical phases of organization, production and salesmanship. Each department, of necessity, is made to interlock by the application and cooperation of engineering talent—without which there is likely to occur a "stripped gear," from which immeasurable difficulties may arise. For an organization to neglect one, there is entailed a serious handicap to the other. Engineering talent scrupulously applied to the production of an article may be futile if there is not engineering talent applied to its sale and use. To produce a good pig iron is one art, to correctly sell it is another, and to properly use it is still another. Therefore, it would seem that the greater engineering talent devolves upon the salesman, for his duties—if they be sincerely recognized—are dual. He should not only know and be thoroughly posted as to the character of his company's product, but should be equally as well posted on rational methods and practice for its successful and satisfactory use.

A sales manager of a large concern put the proposition tersely by saying: "My hardest work has been to educate salesmen to cut out selling arguments and confine themselves to giving actual information about what they have to sell." I dare say that there is not a buyer of pig iron who does not know by heart the average run of stereotyped salesmanship talk. However, when a salesman asks for an opportunity to talk with the superintendent or foreman about his foundry troubles, or methods to improve mixtures or cupola practice, he is sure to receive a hearty welcome and be looked upon and treated not simply as a salesman, but as a sales engineer, the private services of whom would cost a large sum of money.

On what plausible basis can a salesman combat complaints if he should not be able to intelligently analyze his product and suggest the best methods to be employed in its use? What weight does even a sales manager's word carry with a customer when he lulls himself into a supposed state of security, in replying to complaints, by saying: "We have carefully checked over our analysis and furnace records, and find nothing wrong—in fact the car of iron shipped you is of identically the same analysis as the last car; made in the same furnace with the same kind of raw materials. There must be something wrong with your foundry operations." Rather than run the risk of possible insult to the intelligence of the buyer, would it not prove the wiser plan to be in position to say: "We shall be glad to send over our sales engineer to your plant to co-operate with you in ferreting out the trouble?"

Sell by Information

It should be apparent to both parties interested that in addition to the chemical equation the personal and physical equations enter alike into the production and use of pig iron. The furnaceman or foundryman who ignores these combined factors will sooner or later come to grief and strained relations. Therefore, instead of both parties invoking the time worn and "stereotyped verbage of combat," would not the wiser plan be to call into service the modern arbiter—sales engineer?

In 1911 the writer first accepted service with a furnace producing company in the Birmingham district under J. W. Porter, sales manager, who conceived the idea that inasmuch as the foundrymen of the South and Southwest were being asked to purchase, at an increased price, a special analysis iron they were justly entitled to receive, if desired, technical knowledge as to its best possible use. A campaign of engineering salesmanship, though it was not so termed, was inaugurated and resulted in the writer not only visiting the various foundries to sell them iron, but to demonstrate its superior quality by proper percentage mixtures with other metals, supplemented by the use of rational cupola and foundry practice. At the time, and for several years thereafter, the general office was repeatedly informed by other furnace interests and sales organizations that such a policy was not only expensive, but would eventually lead to grave misunderstandings between buyer and seller. In other words, as one party expressed it: "I sell a foundryman a car of pig iron and that ends it. If I attempt to show him how to use it and bad castings result, I lose a customer." The writer's invariable answer was that if the proper iron should be sold and used under proper cupola and foundry conditions, there should be no excessive bad castings. On the other hand, if trouble should be experienced the iron should not be made to bear the brunt of complaint unless it rightfully belonged to it. He further argued that to show the foundryman where his troubles were would ultimately result in gaining a customer who would stick.

With the lapse of the past nine years, in the experience of the writer, there has come a vindication of the pig iron sales engineer theory. Today the progressive furnace companies and salesmanship organizations of this country are vigorously waging such an educational campaign. Two factors have crystallized the sentiment—the purchasing engineer has made it difficult for the simple salesman to sell him; the sales engineer has spurred the foundryman on to become a purchasing engineer, instead of a simple purchasing agent.

BUILDS MODERN STEEL PLANT

Fig. 1—Eighteen-inch roughing mill showing arrangement of motor, reduction gear set, flywheel and stands—Billet furnace in background

ALMOST 10 years ago a small open-hearth steel foundry began operating at Pittsburg, Cal., the small tonnage of castings being sold to interests on the Pacific coast engaged in shipbuilding, gold-dredging, logging, mining and manufacturing. With the growth of these industries west of the Rocky mountains, the steel foundry developed rapidly until in 1917 an output of approximately 800 tons of acid and basic open-hearth castings were produced each month. This plant, which was designed by the late S. T. Wellman for the Columbia Steel Co., was described in the Sept. 20, 1917 issue of THE IRON TRADE REVIEW.

During the war the Columbia company extended its open-hearth capacity and made plans for a rolling mill to augment the open-hearth plant. The surprising growth of shipbuilding on the Pacific coast and the rapid extension of other industries reflected an increased need for rolled products such as reinforcing bars, squares and rounds and light shapes. In reponse to the demand, ground was broken on Aug. 8, 1919 for a modern rolling mill. Owing to the coal, steel and railroad strikes the date of commencing operation was considerably delayed, but due to the persistent efforts of the management, the mill was sufficiently completed to commence breaking down 8 x 8-inch ingots on March 29, 1920.

The plant consists of three mills, the arrangement of which is shown in Fig 3. It will be noted that the buildings and mill equipment are arranged so that the steel travels in a practically straight line from the time the ingots are broken down until the finished bars reach the warehouse.

Billet Furnace Is Oil Fired

As indicated in the drawing, the ingots received from the open-hearth plant are heated in an oil-fired pusher type continuous furnace, 91 feet long and 6 feet 6 inches wide, having a capacity of 100 8-inch square ingots. At the present time, the ingots are broken down into billets on an 18-inch merchant bar mill and later finished into bars on a 12-inch Belgium mill.

The merchant mill consists of four stands, three of which are 3-high and one is 2-high. Later when the complete equipment of the plant is in operation, large rounds, squares and light shapes will be finished direct from the ingot on this mill. As shown in Fig. 7, the mill is motor driven through a reduction gear set. The motor is of the heavy duty, slip ring type having a speed of 257 revolutions per minute and rated at 800 horsepower. This speed is reduced by means of herringbone gears to 85 revolutions per minute for the mill. A 16-foot flywheel weighing 20 tons stabilizes the rotation of the mill pinions. The mill is equipped without board bearings and all pinions are enclosed in metal guards. At the present time, two mechanical tilting tables are provided, one on each side, and later it is expected that another set will be added.

Billets from the 18-inch merchant mill are reheated in a 45 x 13 foot oil-fired furnace similar to that serving the merchant mill. From this furnace, billets are finished in a 12-inch Belgium mill consisting of four 3-high stands and one 2-high stand. It has

FIG. 2—VIEW OF 12-INCH FINISHING MILL—COOLING BEDS AND OPEN COURT ARE SHOWN IN BACKGROUND

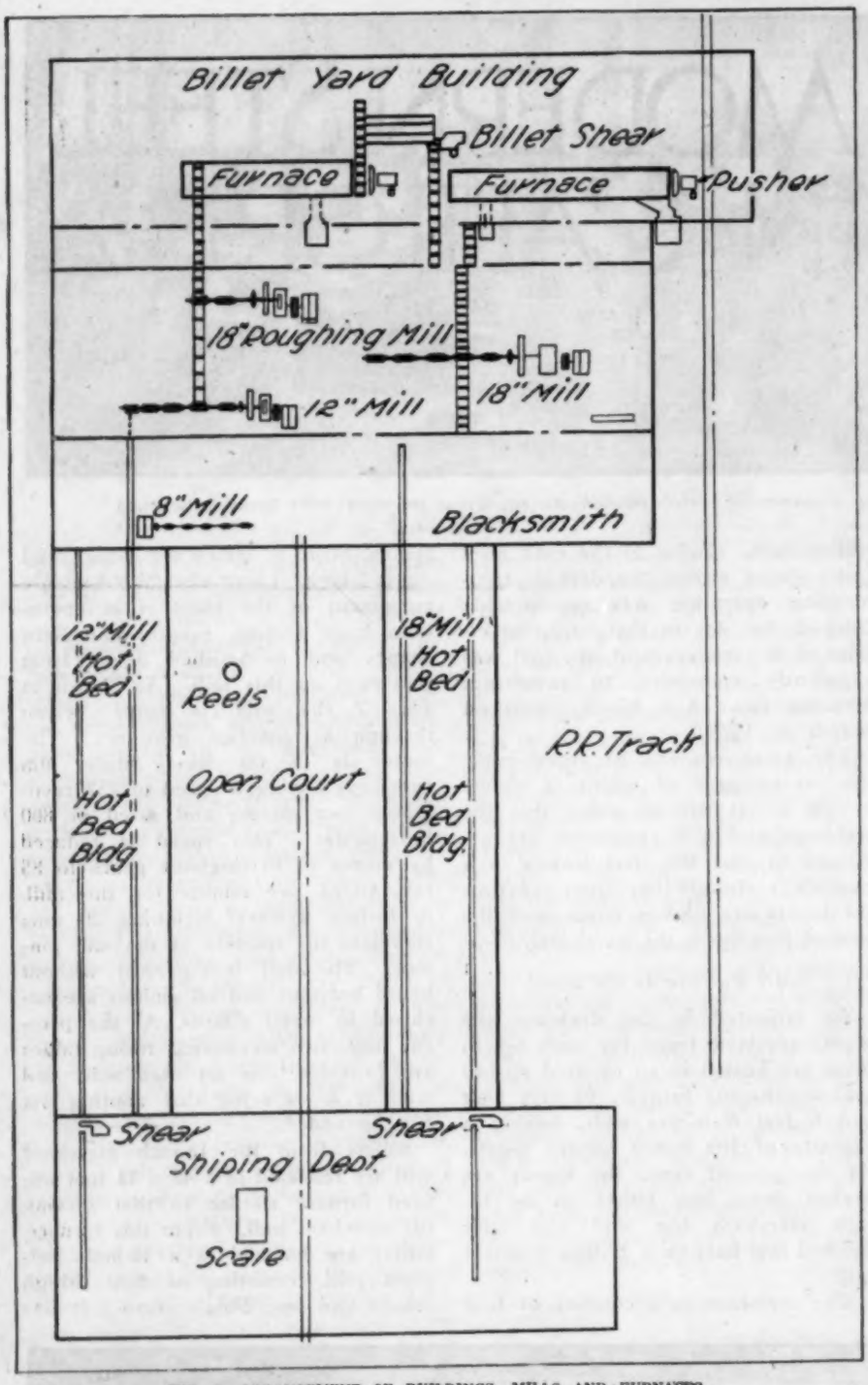


FIG. 3—ARRANGEMENT OF BUILDINGS, MILLS AND FURNACES

an independent 18-inch roughing mill of one 3-inch stand. Each of these mills is driven independently by a 450-horsepower motor running at 450 revolutions per minute. The roughing mill is driven through 4½ to 1 reduction gears at the rate of 100 revolutions per minute. The flywheel in this installation is 12 feet in diameter and weighs 14 tons. The motor speed in the case of the 12-inch mill is reduced to 185 revolutions per minute through a 2½ to 1 reduction gear set. The flywheel is 10 feet in diameter and weighs 10 tons. As in the case of the merchant bar mill these mills are also equipped with pinions which are entirely enclosed in metal guards.

The 18-inch roughing mill is equipped with a billet conveyor which delivers billets directly into the mill from the furnace. A down-side roughing table and the bar conveyor for direct bars from the roughing mill to the 12-inch finishing mill now are being installed. This conveyor will deliver billets to the shear from the 18-inch merchant mill table and also will convey the cut billets to the billet furnace. The cooling bed for the 12-inch finishing mill is 20 feet wide by 200 feet long and is equipped with top and bottom conveyors. As shown in Fig. 4, the bottom conveyors deliver the bars to the finishing shears in the end of the storage building. The cooling bed for the 18-inch merchant mill has not yet been installed.

Develops Novel Ingot Extractor

One of the features of the plant is the ingot extractor shown in Fig 6. This device is operated entirely by compressed air and was designed and built by the Columbia Steel Co. The machine not only takes ingots out of the furnace, but turns every other one so that all pass through the mill small end first.

The buildings which were fabricated and erected by Dyer Bros., San Francisco, are of the "V" roof type of structural steel covered with galvanized corrugated iron. The walls have liberal space devoted to windows and on account of the high roof the natural lighting of the buildings is unusually satisfactory. The crane clearance exceeds 28 feet in all cases. By consulting the floor plans shown in Fig. 3, it will be noticed that the billet building, mill building, and the lean-to, form one side of an open court, while the other sides consist of the cooling bed building of the 12-inch mill, the cooling bed building for the 180-inch mill, and the shipping and storage building. The billet building is served by two 5-ton overhead cranes; the mill building, by one 10-ton crane; and the shipping and storage building by one 10-ton crane. The traveling cranes were built by the Cyclops Iron Works, San Francisco. The crane motors use alternating current and were manufactured by the General Electric Co., Schenectady, N. Y.

The precautions taken for safety, some of which have been previously mentioned, extend to practically all moving parts. All gearing is solidly enclosed; motors, transformers, and flywheels are screened with heavy wire screening; spacious platforms are built to allow easy accessibility from one side of the mill to the other and all area ways have been planned with as much clear space as possible to prevent accident as a result from crowding.

Since April 5, when the 12-inch finishing mill started operation, all mills have run without any interruption, the first month's operation showing an average output of about 100 tons per 8 hours. At the present time, all of the mills are being operated on the two-shift plan. The product consists of ⅜ to 1¼-inch square deformed bars for reinforcing; ½ x 1½-inch plain square round bars; and rivet rods from ⅝-inch up in size. This material is being rolled to meet any of the standard specifications.

FIG. 4—A VIEW OF COOLING BEDS OF 12-INCH MILL—FINISHING SHEAR SHOWN IN FOREGROUND. FIG. 5—INTERIOR VIEW SHOWING THE THREE MILLS—NOTE CRANE CONSTRUCTION. FIG. 6—BILLET FURNACE, SHOWING INGOT EXTRACTOR AND BILLET BAR CONVEYOR

FIG. 7—MERCHANT BAR MILL, SHOWING ARRANGEMENT OF DRIVE

The open-hearth plant and rolling mill of the company enjoy unusual good shipping facilities. Pittsburg is served by two transcontinental railroads, the Sante Fe and the Southern Pacific, and also the electric line of the San Francisco and Sacramento Electric Railway Co. Pittsburg is situated on New York slough which is one of the outlets of the San Joaquin river. This gives the plant deep water connections with San Francisco bay, allowing material to be shipped direct by lighters from the company's docks to the side of steamers in the bay. Oil for the furnaces and boilers is supplied by the Standard Oil Co. of California and is delivered to the company's docks by water.

Serves Large Area

The company ships its product to an area roughly bordered by Alaska on the north, Mexico on the south, eastern Nevada and western Montana on the west and Asiatic Pacific ports on the west. The open-hearth plant of the company comprises what is thought to be the largest steel foundry west of the Rocky mountains. The open-hearth furnace capacity which amounted to approximately 800 tons per month in 1917, at present is approximately 7000 tons per month.

The officers of the Columbia Steel Co. follow: W. E. Creed, president; Joseph D. Grant, vice president; Russel Pearce, secretary and treasurer, and John D. Fenstermacher, assistant secretary. D. H. Botchford is general manager of the Pittsburg plant, Thomas J. Patterson is general superintendent of manufacture, and N. A. Becker is superintendent of the rolling mill. The company maintains a branch plant in Portland, Oreg., which in engaged in making converter steel. The general offices of the company are situated at 503 Market St., San Francisco.

Studies Sulphur Content in Rivet Steel

PROGRESS made by the joint committee investigating phosphorus and sulphur in steel is indicated in a report representing the activities of three subcommittees. The statement of the work accomplished to date by the committees on statistics, manufacture and tests, follows an earlier report by Henry S. Rawdon of the bureau of standards, Washington, D. C., on the opinions of foreign metallurgists on limits of sulphur and phosphorus in specifications for steel, as published in THE IRON TRADE REVIEW, April 8, 1920.

The program of tests, as originally outlined, is divided into Series A and B, the former covering six groups of material with varying phosphorus and sulphur content, the sulphur in all steels to be residual; and the latter in which sulphur may be added during the later stages of manufacture and in which the phosphorus and sulphur content may be considerably higher than in Series A. The committee on manufacture first has taken up the Series A part of the program.

Experiment Is Conducted

This committee, of which Dr. G. K. Burgess of the bureau of standards is chairman, obtained some rivet steel, which is included in the test, and went to the Duquesne works of the Carnegie Steel Co. to witness the fabrication of rivet rounds from heats of steel varying in sulphur content. Selection was made of material from heats containing 0.03, 0.04, 0.05, 0.06, 0.07, and 0.08 per cent sulphur, the phosphorus content remaining normal. All stages of the manufacturing process were inspected by the committee.

"The manufacturers kindly furnished the records of the open hearth charges as well as rolling temperatures," states the report. "It was the original intention of the committee on manufacture to obtain material from ingots which had not been allowed to get cold. The manufacturers, however, offered also a series of cold ingots of 0.03, 0.04, 0.05, and [illegible]er cent sulphur which the comm[illegible] accepted as it thought that this might be a means of furnishing additional information."

Thirteen ingots, each 18 x 20 x 72 inches, of varying sulphur content, were rolled into 4 x 4-inch x 4-foot billets. In order to eliminate any variable which might be introduced by piping or segregation, the committee discarded 40 per cent of the steel from the top of each ingot. The next six billets after the top discard, numbered one to six in sequence, were taken for the pur-

poses of the investigation and each billet was properly stamped with the heat and billet number. Billets 1, 2, 3 and 4 from each ingot were rolled into 63/64-inch rounds, each billet yielding eight bars 9 feet 8 inches long. Billets 5 and 6 were held in reserve. The committee was unable to obtain a heat of 0.07 per cent sulphur but the Carnegie company is now working toward this end. One heat containing the unusual content of 0.17 per cent sulphur, was obtained.

Half of the material was made into rivets at the Pennsylvania railroad company's shops at Altoona and the Champion Rivet Co., Cleveland. The other half of the material was sent to the Watertown arsenal, the navy experiment station at Annapolis, Md., and the bureau of standards for various mechanical tests. The rivets made at Altoona and Cleveland were in two types of head, cone and button, and of 2¾, 3½ and 6-inch lengths. Temperature readings of the various bars were taken with an optical pyrometer. The rivets were properly stamped with heat and billet numbers and the committee official stamp and sent to the three testing stations.

Arranges Schedule of Tests

The committee on tests, with Dr. F. C. Langenberg of the Watertown arsenal, as chairman, has arranged a schedule of tests covering tension, fatigue, impact, hardness, bend, tortion, shearing and forgability. Fabrication tests also are contemplated, it is stated, such as cold and quench bend, hot flattening, upsetting, and shearing strength of riveted joints.

A bibliography has been prepared by the statistical committee. This work was done under the direction of H. L. Whittemore of the bureau of standards, as chairman of the committee. The bibliograhy is preceded by an introductory statement and general comment upon the effects of phosphorus and sulphur on the properties of steel as revealed by a study of the references given in the list. This committee also has made a survey of used material in the shops of two eastern railroads and has obtained some high phosphorus and high sulphur material which has been in service. This material includes connecting rods, a car axle, a crankpin, parts of a locomotive firebox and some channels. These will be analyzed by the committee on tests. The statistical committee now is engaged upon a preliminary survey of available material for the investigation in the automotive industries.

Announcement also is made of changes in personnel in the joint committee. The membership in the committee held by the United States shipping board has been given up and assigned to the Society of Naval Architects and Marine Engineers, directly represented by F. W. Wood, vice president of the American International Shipbuilding Corp., Philadelphia. Termination of the United States railroad administration created vacancies filled by the American Railway association in the appointment of H. B. McFarland of the Atchison, Topeka & Santa Fe railroad, Chicago, and F. M. Waring of the Pennsylvania railroad, Altoona. Mr. Waring formerly was one of the railroad administration representatives. Other organizations having representation in the joint committee, of whch Dr. Burgess is chairman, are the bureau of standards, the war department, the navy department, the national research council, the American Society for Testing Materials, the Society of Automotive Engineers, the Association of American Steel Manufacturers, and the Steel Founders Society of America, making a total membership of 10 organizations.

Prepares Reading Courses on Iron, Steel and Machine Shop Subjects

IRON and steel, machine shop work and shipbuilding are three subjects figuring largely in after-war reading courses prepared by the home education division of the bureau of education, department of the interior. Lists of books upon these subjects have been prepared and the reading of a stated number of them brings a certificate from the government. To enroll it is necessary for persons to send their name, age, address, occupation, education, date of beginning course, name and number of course to the home education division. In selecting the books to be read the division has scanned various libraries on the subjects and chosen only those which should prove most helpful. The division's recommendations follow:

Iron and Steel

1—Non-Technical Chats on Iron and Steel. By L. W. Spring.
2—The A B C of Iron and Steel. By A. O. Backert. (Third edition.)
3—The Metallurgy of Iron and Steel. By Bradley Stoughton.
4 and 5—Metallurgy of Iron and Steel. By Harbord and Hall. (Two volumes, each counting for one credit. Vol. 2 on rolling and other mechanical treatment. Sixth edition.)
6—Modern Coking Practice. By Christopher and Byrom. (Two volumes.) Vol. 2 on by-products.
7—Principles, Operation and Products of the Blast Furnace. By J. E. Johnson.
8—The Blast Furnace. By Robert Forsythe. (Third edition.)
9—Principles of Iron Founding. By Richard Moldenke.
10—Production of Malleable Castings. By Richard Moldenke.
11—Iron and Steel. By Jone and Oberg.
12—Steel, Its Selection, Annealing, Hardening and Tempering. By R. E. Markham. (Fourth edition.)
13—Steel and Its Heat Treatment. By D. K. Bullens. (Second edition.)
14—Electric Furnaces in the Iron and Steel Industry. By Rodenhauser and others. (Second edition.)

Machine Shop Work

Section 1

1—Machine Shop Drawings. By F. H. Colvin. (139 pages.)
2—Engineering Drawing. By T. E. French. (Second edition, 329 pages.)
3—Machine Shop Calculations. By F. H. Colvin. (174 pages.)
4—Practical Shop Mechanics and Mathematics. By J. F. Johnson. (130 pages.)

Section 2

5—Machine Shop Practice. By W. R. Hartman. (247 pages.)
6—Machine Shop Tools and Methods. By W. S. Leonard. (Sixth edition, 573 pages.)
7—Textbook of Advanced Machine Work. By R. H. Smith. (Fifth edition, 744 pages.)
8—Methods of Machine Shop Work. By F. A. Halsey. (286 pages.)

Section 3

9—Lathe Design, Construction and Operation. By O. F. Pertigo. (New edition, 469 pages.)
10—Turning and Boring. By F. D. Jones. (307 pages.)
11—Jigs and Fixtures. By F. H. Colvin and L. L. Haas. (168 pages.)
12—Punches and Dies. By F. A. Stanley. (434 pages.)
13—Automatic Screw Machines and Their Tools. By C. L. Goodrich and F. A. Stanley. (255 pages.)
14—Gear Cutting Machinery. By R. E. Flanders. (319 pages.)
15—Handbook of Small Tools. By Erik Oberg. (517 pages.)
16—Modern Toolmaking Methods. By F. D. Jones. (309 pages.)
17—Planing and Milling. By F. D. Jones. (306 pages.)
18—Die Making and Die Design. By F. D. Jones. (339 pages.)

Section 4

19—Steel and Its Heat Treatment. By D. K. Bullens. (Second edition, 483 pages.)
20—Steel, Its Selection, Annealing, Hardening and Tempering. By F. R. Markham. (Fourth edition, 367 pages.)
21—Electric Welding. By D. T. Hamilton and Erik Oberg. (294 pages.)
22—Oxy-Acetylene Welding. By S. W. Miller. (287 pages.)

Removing Tar from Coke Gas-II

Oldest Method of Tar Removal Is by Washing—Several Improvements Have Been Introduced, Insuring Finer Distribution of Gas and Proper Adjustment of Parts of Plant to Correct Temperatures

BY A. THAU

PROBABLY the oldest method of removing tar from gas is by passing it through specially designed washers. One of the first types used for the purpose which still is found in many plants, consists of a square box of iron plates and is horizontally divided into two compartments, as shown in Fig. 9.

The compartment *b* is much smaller than *a* and only high enough to insure an even distribution of the gas. The plate *c*, separating the two compartments carries a large number of vertical pipes *d* of about ¾-inch diameter which reach into the compartment *a* to about 6 inches from the bottom. The pipes *d* are of such a shape on their bottom ends as to form long teeth to facilitate a fine division of the gas. The gas enters the washer through the pipe *e* which is connected to the top compartment either by an angle valve, as shown in Fig. 9, or by means of a bend connected direct to an inlet, provided in the center of the top cover. The gas distributes itself in the chamber *b* over the pipes *d* which are sealed on their lower ends in tar or liquor. After having passed through this washing seal the gas leaves the washer through the pipe *f*. The apparatus is continuously fed by tar or liquor which is introduced through the syphon *g*. The tar level in the compartment *a* is maintained constant by a syphon of special design connected to a seal pot. This latter arrangement is identical in construction with the one shown in connection with Fig. 2. It will be understood that the more constant the liquid level around the pipes *d* is maintained, the better the washer works. With too great a velocity or pressure of the gas the liquid would splash about in the compartment *a* and some of the pipes *d* would be temporarily unsealed causing a certain amount of gas to slip unwashed. To prevent this, the washers are nearly always placed on the suction side of the plant generally immediately before the exhausters. They are very effective washers but are apt to disturb the working of the plant by creating great fluctuations in the suction of the gas if the tar in the compartment becomes too thick by getting too cool. This also happens in the case of an obstruction in the outlet seal caused by the liquid level being raised unduly high, thus offering too great a resistance for the exhauster to pull the gas through.

Insures Circulation of Liquid

To insure a better circulation of the liquid and, at the same time to decrease the large area of the liquid level, the washer has been improved by Suess as shown in Fig. 2. The compartment *a* has been divided into four parts by means of partition plates *b* in such a way that each portion has a different liquid level, while the pipes *d* in each compartment are correspondingly longer or shorter so as to provide an even seal for every pipe. In line with each partition, baffle plates *c* which do not reach right down to the bottom are arranged, so that the liquid running from one compartment to the next is kept in perpetual circulation and thus the settling of pitchy matter on the bottom of the washer is prevented. The compartment near the gas inlet holds the highest liquor level while the one near the outlet holds the lowest. The liquor or tar is introduced in the former and the latter is provided with a syphon *e* which maintains a constant level and connects at the same time a seal pot *f* to the washer. Underneath every partitioned compartment an outlet cock *g* is arranged by means of which the whole washer can be emptied for cleaning or changing the liquid, the contents being conducted into the seal-pot. Gas inlet and outlet connections are arranged precisely in the same way as shown in Fig. 9.

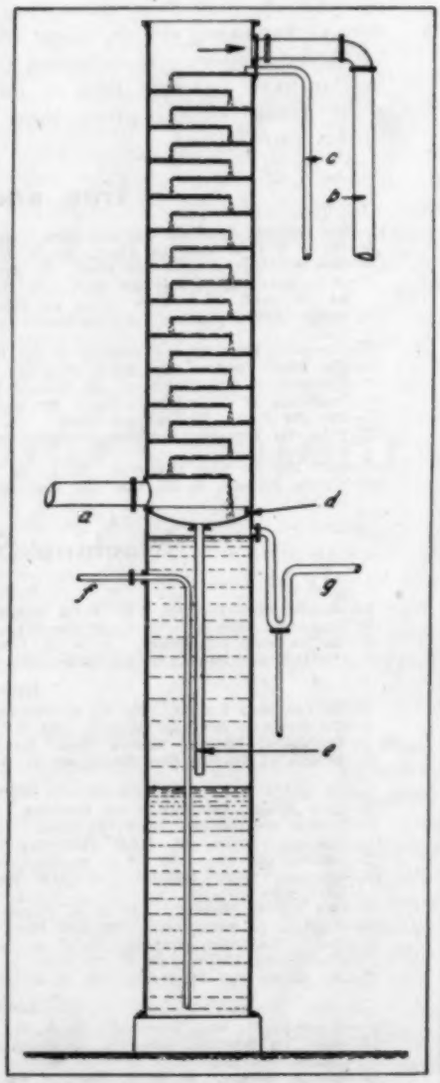


FIG. 1—WASHER USED IN CONNECTION WITH DIRECT RECOVERY PLANT

Washers of this type, specially adapted to wash the tar out of the gas, have been improved in England to insure a much finer distribution of the gas so that it passes the liquid in form of small bubbles. Fig. 3 shows a tar washer developed by Kirkham & Co., Westminster, England, with front plate removed to show the interior. The gas enters the top chamber through the inlet branch to the right. The top and bottom chambers in this washer are separated by a layer of channel castings which for convenience in removing are provided with two eye holes on top and rest upon two strips cast on each side on the washer side plates. A section through these channel castings is shown separately in Fig. 4. They are fastened together in pairs so that a large rectangular slot *a* is left between each two channels. On the bottom edges each channel holds two finely perforated plates, the shorter ones *b* and longer ones *c*. By placing these channel pairs together in the washer they form, between each pair, a flue *d* which is jointed and machined on top so that no connection is made with the top chamber of the washer. The flues *d* are on one end, in Fig. 3 on the left, connected to the outlet chamber of the washer. The outlet

This is the second of a series of articles on methods of extracting tar from coke oven gas. The first article appeared May 27.

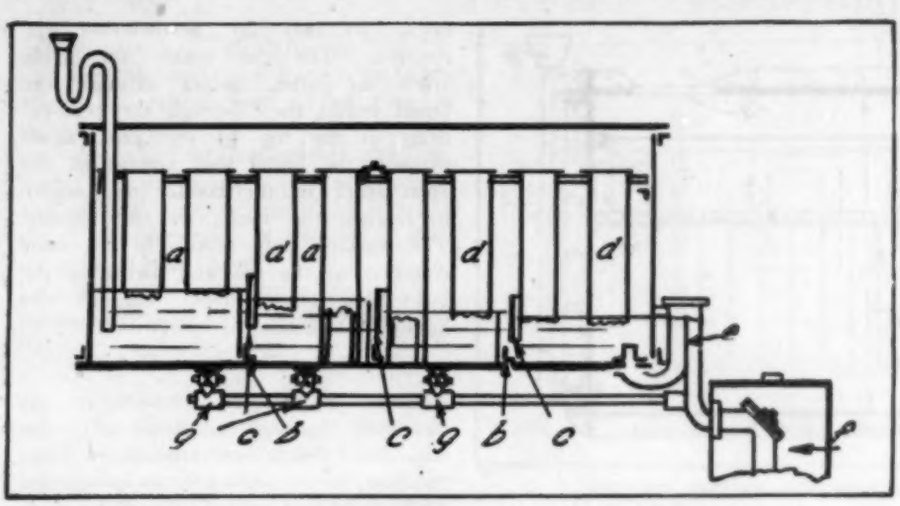


FIG. 2—WASHER BY SUESS, WHICH INSURES GOOD CIRCULATION OF LIQUID

branch corresponds on the left side of the washer in Fig. 3 with the inlet on the right. The bottom part of the washer is filled with tar or liquor which is introduced continually from the top through a syphon and the height of the liquid can be regulated to the desired gas pressure so that the screens *b* and *c* can be partially or entirely immersed in the liquor, depending upon the pressure conditions of the plant. The incoming gas distributes itself in the top chamber of the washer, is forced down through the slots *a*, passes above the tar level in the bottom of the washer finely distributed through the perforated screens *b* and *c* and arrives in the channels *d* through which it reaches the outlet of the washer. In section *A*, Fig. 4, the gas is assumed to pass in the proper way; that is, above the tar level through the perforated plates. Section *B* shows the passage of the gas on the assumption that the perforation of the outer screens is obstructed, the gas passing through the inner screens in the usual way, but being unable to get through the outer screens, passes underneath them, being washed with less distribution. In section *C* the inner screens are obstructed but the outer ones are still open and the gas passes in the reverse order of that in *B*. This latter passage is made possible by the outer screens reaching further down than the inner ones. In section *D* both screens on both sides are obstructed and the gas

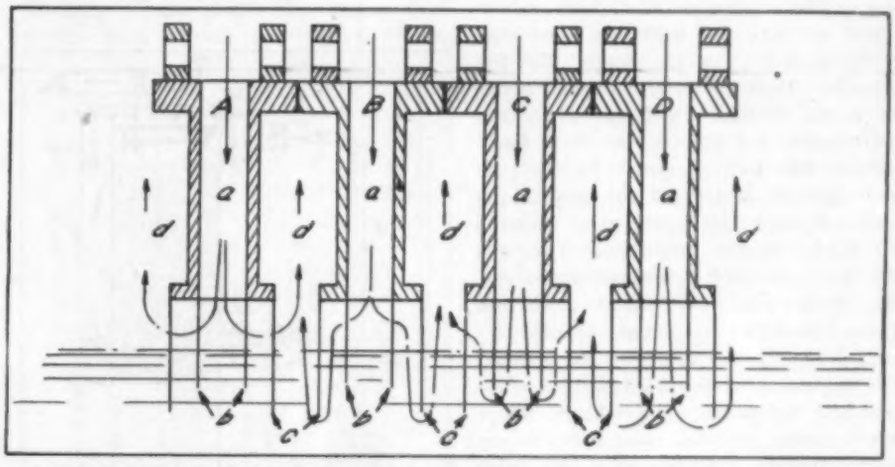


FIG. 4—SECTION THROUGH INTERNAL PARTS OF TAR WASHER SHOWN IN FIG. 3, INDICATING GAS PASSAGES

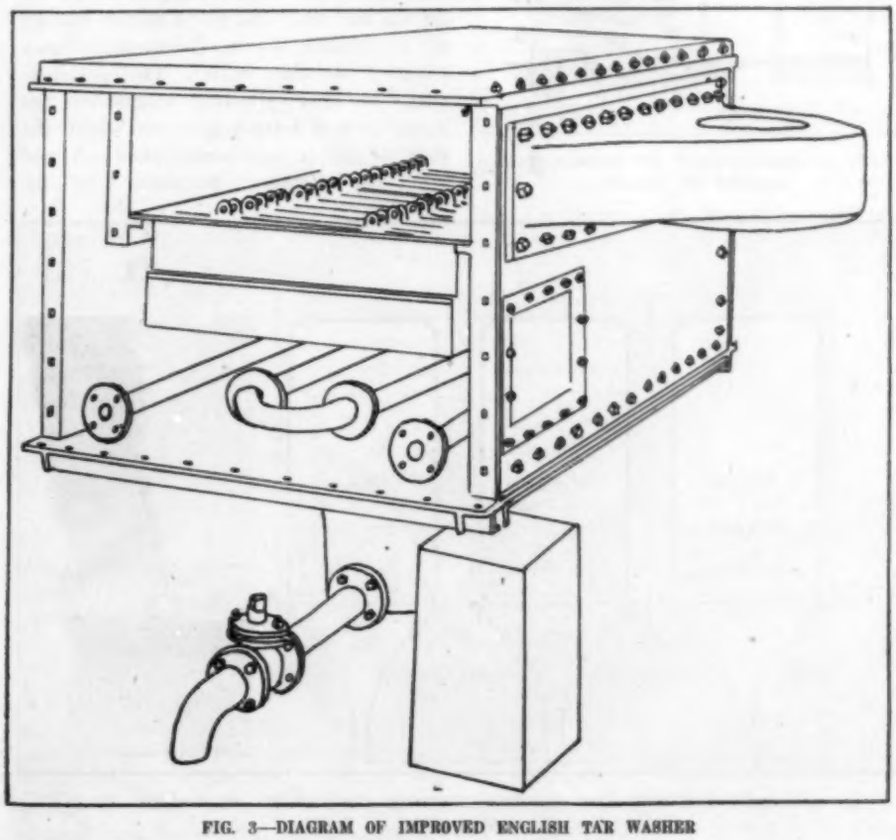


FIG. 3—DIAGRAM OF IMPROVED ENGLISH TAR WASHER

is forced underneath both pair of screens through the liquid. Thus the apparatus still acts as a washer in the ordinary way when all the screens are obstructed by pitch. The gas pressure and the washing effect can be regulated in altering the height of the liquid in the washer by means of a movable seal pipe. The bottom chamber of the washer is provided with a steam coil so that if the tar in the bottom of the washer becomes too thick it can be heated up. A great advantage of the washer is that the channel sections can be easily removed and cleaned and that a slight increase in pressure, proportional to the height of the seal of the screens in the liquid at once shows that the gas is not passing through the screens.

The Cripps' tar extractor shown in Fig. 5, which is based on a similar principle, consists of a square or round box in which a number of steel troughs *a* are suspended close to the top of the apparatus. The troughs are set on one end *b* tight against the side of the washer while the opposite ends are connected to the separately arranged gas inlet chamber *c*. The troughs are open on the bottom and on both sides

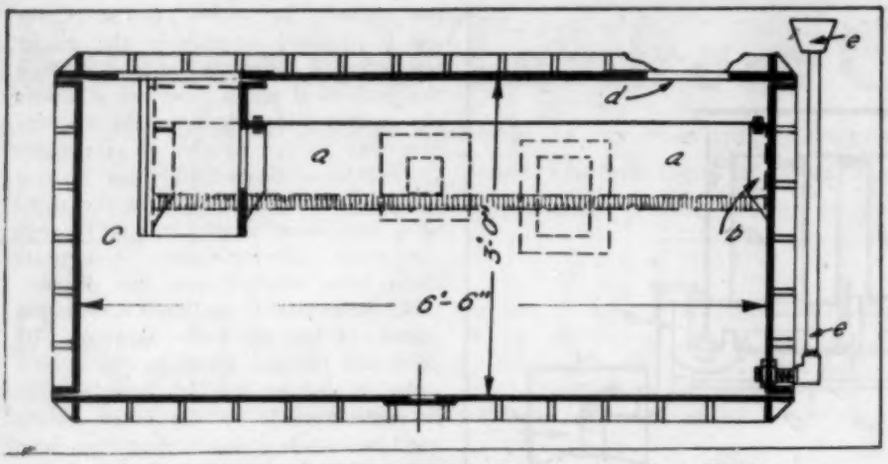


FIG. 5—ANOTHER ENGLISH TAR WASHER OPERATING ON SAME PRINCIPLE

they have very fine teeth about 2 inches long. The washer is filled with tar or liquor so that the teeth are immersed in the liquid. The gas enters the distributing chamber and travels under the hoods through the liquid where the teeth cause the gas to be very finely divided and well washed. In case the teeth become obstructed the gas simply passes through the liquid, thus creating a slightly higher pressure. The gas fills the free space *d* between and above the hoods over the liquor level and leaves through an outlet branch arranged on the top cover of the washer. The apparatus is provided with a movable seal, by means of which the liquor level inside can be regulated to any desired height. A liquor or tar inlet, arranged similar to the washers in Figs. 9 and 2, provides fresh tar or liquor continually which is conducted to the bottom of the washer. A noticeable feature of this washer is the large liquor space compared with the small gas room. In case this washer is built with a round shell, the troughs also are made circular so as to offer as large a washing surface as possible.

Introduces Another Method of Washing

The tar washer developed by Livesey, shown in Fig. 7, corresponds to those previously mentioned in general features, but differs in the method of washing. The hoods are closed on the bottom by a plate bent in section similar to the shape of a rail and perforated on top as well as on both sides. The washer is filled with liquor so that the liquid just touches the bottom edges of the hoods and the perforated plates are immersed as far as they project. The gas travels in the opposite direction through the washer as compared with the previously mentioned ones, that is to say, the internal space of the troughs is connected to the outlet chamber and the gas enters on the top of the hoods. As indicated by arrows in Fig. 6, it travels down between the hoods and by its pressure, the liquid level is pressed down and forced through the perforations into the interior of the

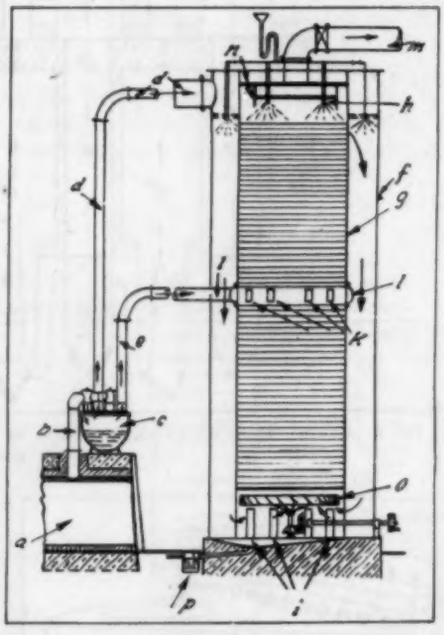


FIG. 6—ARRANGEMENT OF GERMAN TAR WASHER BY MULLER

hoods so that the perforations are covered. The gas enters the grids from the sides, passes through the liquid inside, then through the perforations in the top of the grid, again through the liquid and arrives in the open space of the hoods from where it reaches the outlet of the washer. The washing fluid travels in the same direction as the gas and owing to the gas being passed twice through the liquid, its washing is effective.

Extracting Tar from Hot Gas

While in the tar washers so far described, the gas is treated after being cooled down near atmospheric temperature, it is necessary, in connection with several types of direct recovery processes, to extract the tar from the hot gas immediately after leaving the collecting main. The main object in these arrangements is to free the gas from its tar and at the same time prevent a condensing of ammonia liquor. If the plant is not provided with an ammonia still, the condensed liquor, the formation of which cannot be avoided altogether, is in most cases added direct to the bath in the saturator. However, in order to keep the ammonia liquor in suspension in form of steam, a condensation must be prevented as much as possible while the tar is being extracted.

The hotter the gas from the ovens, the less tar it contains. Thus it follows that the gas given off during the first part of the coking period contains more tar than the gas given off during the later stages. The tar washer by W. Müller, Essen, Germany, is constructed on this basis. The arrangement of two collecting mains on the ovens is well known in cases where the surplus gas is separately taken off and used for domestic purposes. In the

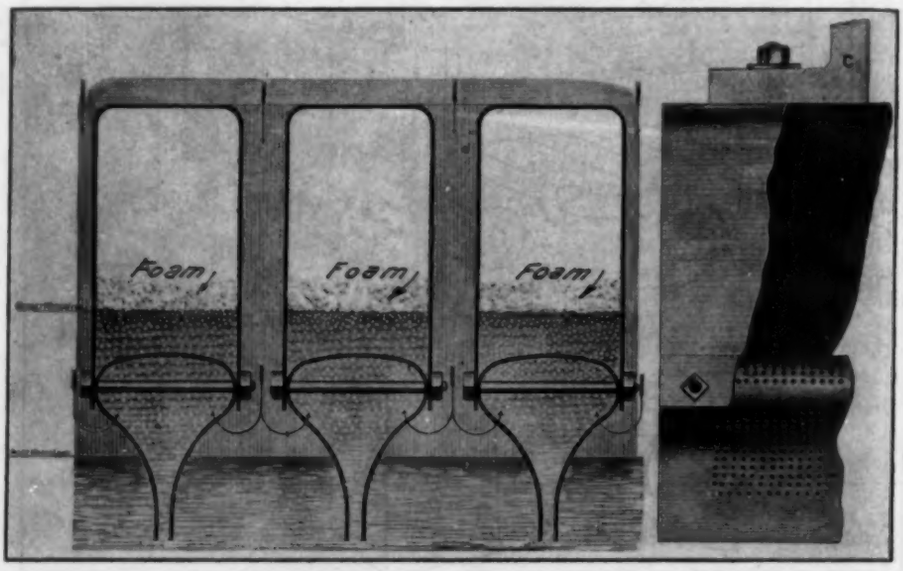


FIG. 7—SECTION AND SIDE VIEW SHOWING INTERNAL ARRANGEMENT OF WASHER DESIGNED BY LIVESEY

arrangement by Müller in Fig. 6 such a fractionate coal distillation is utilized, solely for the purpose of effecting a proper separation of the tar from the hot gas. In the tar washer the gas from both collecting mains is brought and mixed together again so that it enters the saturator in the same way as in any other plant.

In Fig. 6 the gas leaves the ovens *a* through the ascension pipes *b* and enters the collecting main *c*. This is divided in two halves by a partition in the center and thus serves as two separate collecting mains. The gas given off during two-thirds of the coking period enters the portion of the main to the left which is connected to the tar washer by the pipe *d*. After the stated period the valves on the top of the collecting main are reversed so that the gas up to the end of the coking period enters the other half or the right hand portion of the collecting main which is connected to the tar washer by means of the pipe *e*. The washer itself consists of two circular shells *f* and *g* which vary so much in diameter that a comparatively large annular space is left between the two. The inner shell *g* is filled with a effective wooden scrubber packing and provided with tar sprays *h* on top. A further circular row of tar sprays is arranged in the free space between the two shells *f* and *g*. The gas given off during the first coking period enters the washer through the pipe *d* at about 200 degrees Cent. The pipe *d* is connected to the outer shell of the washer on the top and the gas travels down the annular space, is slightly washed by the tar coming from the sprays *h* and arrives at the bottom of the washer at about 100 degrees Cent. On its bottom end, the inner shell is provided with slots *i* through which the gas enters the inner shell where it travels upwards, finely distributed by the wood packing and washed by tar running down from the sprays *h*. Half way up, the inner shell has a further circular row of slots *k* of which each slot is jointed to a circular pipe *l* which is connected direct to the pipe *c*. The gas given off during the last portion of the coking period is introduced through the slots *k* and travels together with the gas of the first coking period which was introduced at the bottom of the inner shell. The gas leaves the washer free from tar through the outlet *m*. To retain any tar which the gas may take up from the sprays *h*, two perforated baffle plates *n* are arranged just under the gas outlet. To increase the velocity of the gas in the inner shell, a horizontally arranged propeller *o*, driven by gear wheels, is arranged just below the wooden packing. Its agitating influence brings the gas in intense contact with the tar running down over the wooden packing. The tar is taken off on the bottom of the apparatus and conducted to a seal pot *p*.

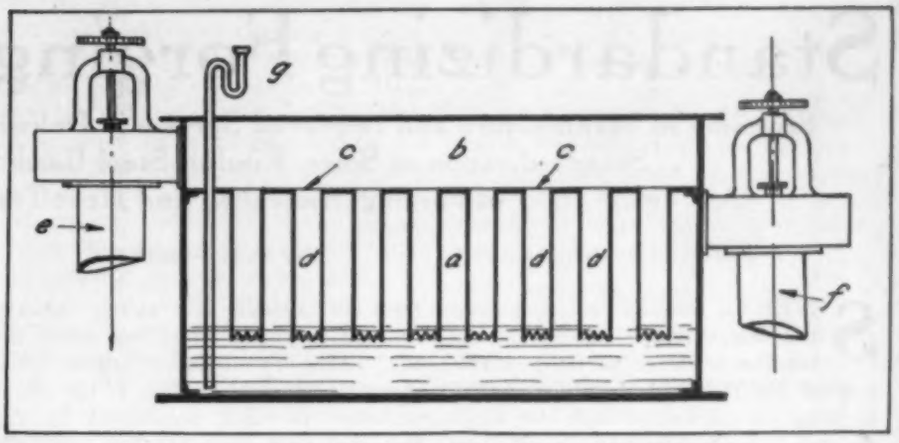


FIG. 9—CROSS SECTION OF COMMON TYPE OF TAR WASHER

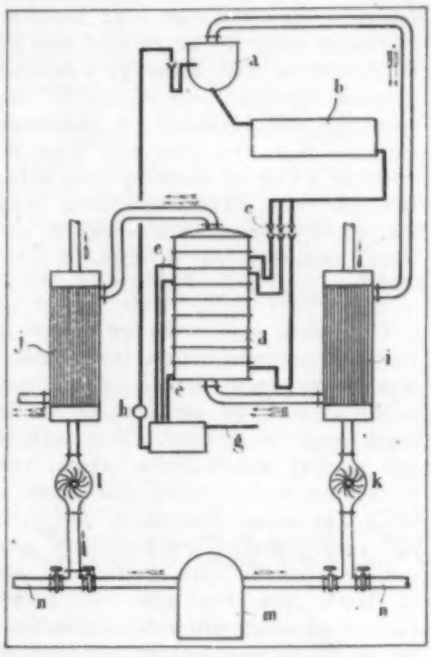


FIG. 8—SECTION OF WASHING APPARATUS DEVELOPED BY A BELGIAN COMPANY

The tar washer designed by Still, Recklinghausen, Germany, which is used in connection with the Still direct recovery process, is shown in Fig. 1. It consists of a large cylindrical tower, the top half of which serves as a tar washer and the bottom part as a separator for tar and liquor. The gas arriving direct from the collecting main enters through the pipe *a*. The tar washer contains a large number of baffle plates which are so arranged that the gas is compelled to travel through the washer in a zigzag way and to give it as long a passage as possible, leaving the washer through the pipe *b*. In the top of the washer ammonia liquor is introduced through the pipe *c*. The liquor travels over the baffle plates in the opposite direction to the gas thereby freeing it from tar and enriching it with ammonia. The tar and liquor are collected on the tray *d* and run through the pipe *e* into the separator. Here they are separated in the usual way by gravity and the tar overflows through the pipe *f* which reaches to the bottom of the separator while the liquor is taken off through the overflow pipe *g*. The column is high enough to provide a sufficient head for the ammonia liquor coming from the separator so that it is conducted over another washer without the aid of a pump.

The satisfactory working of a direct recovery plant is more or less a matter of adjusting the different parts of the plant to the correct temperatures. Great stress is laid upon this point by the tar washing arrangement of the Solvay Co., Brussels, Belgium. This plant is diagrammatically shown in Fig. 8, in which *a* represents the collecting main from which the tar runs to a temperature regulator *b*, consisting of several compartments from which tar at different temperatures runs out of each compartment through the pipes *c* to the tar washer *d*. This is a column washer built up in a number of flanged sections like a still. The gas enters the bottom section and by means of hoods or baffles passes through the tar on each tray and leaves the washer through the outlet on top. The washer differs somewhat from the usual types. Instead of being admitted at the top and leaving at the bottom, the tar passes through a separate intake and outlet for each single section of the washer. The admission of the tar is regulated in such a manner that the hottest tar is admitted at the bottom section and the temperature of the tar decreases from section to section upwards, the one admitted at the top section being the coolest. In this way the heavy tar is washed out of the gas when entering the washer and the lighter constituents the higher it passes upwards. The temperature of the gas

(*Continued on page* 40)

Standardizing Forging Die Blocks

Economy in Manufacture and Improved Service in Delivering Die Blocks Will Follow Standardization of Sizes, Kind of Steel Used, and Methods of Forging, Annealing and Heat Treating

BY C. B. PORTER

SEVERAL factors entering into the manufacture of die blocks can be at least partially standardized by practical drop forge men working in connection with die block makers. Standardization work will reduce the cost of manufacture and materially cut down the time required to make die blocks, therefore aiding prompt deliveries and insuring a much more uniform quality of blocks for die sinkers and hardeners. These factors include size of blocks, the grade of steel in blocks, the method of forging, annealing and hardening treatments.

The standardization of the sizes of blocks into the fewest number of sections and lengths will facilitate prompt deliveries more than any other factor. Die blocks are almost always ordered in pairs. It is impossible for the maker to combine orders from several customers because of the slight variation in sizes occasioned by the fact that each user has his own idea of sizes and has no standard to follow. Therefore each order from each customer must be made as a separate shop order.

If one of a pair of blocks proves defective, its mate must wait for a replacement order to be entered and for the block on that order to catch up, because there are no spares of that particular size available. It sometimes happens that first one and then the other of a pair of blocks proves defective and this means two long waits that could be avoided if standard sizes were manufactured in lots.

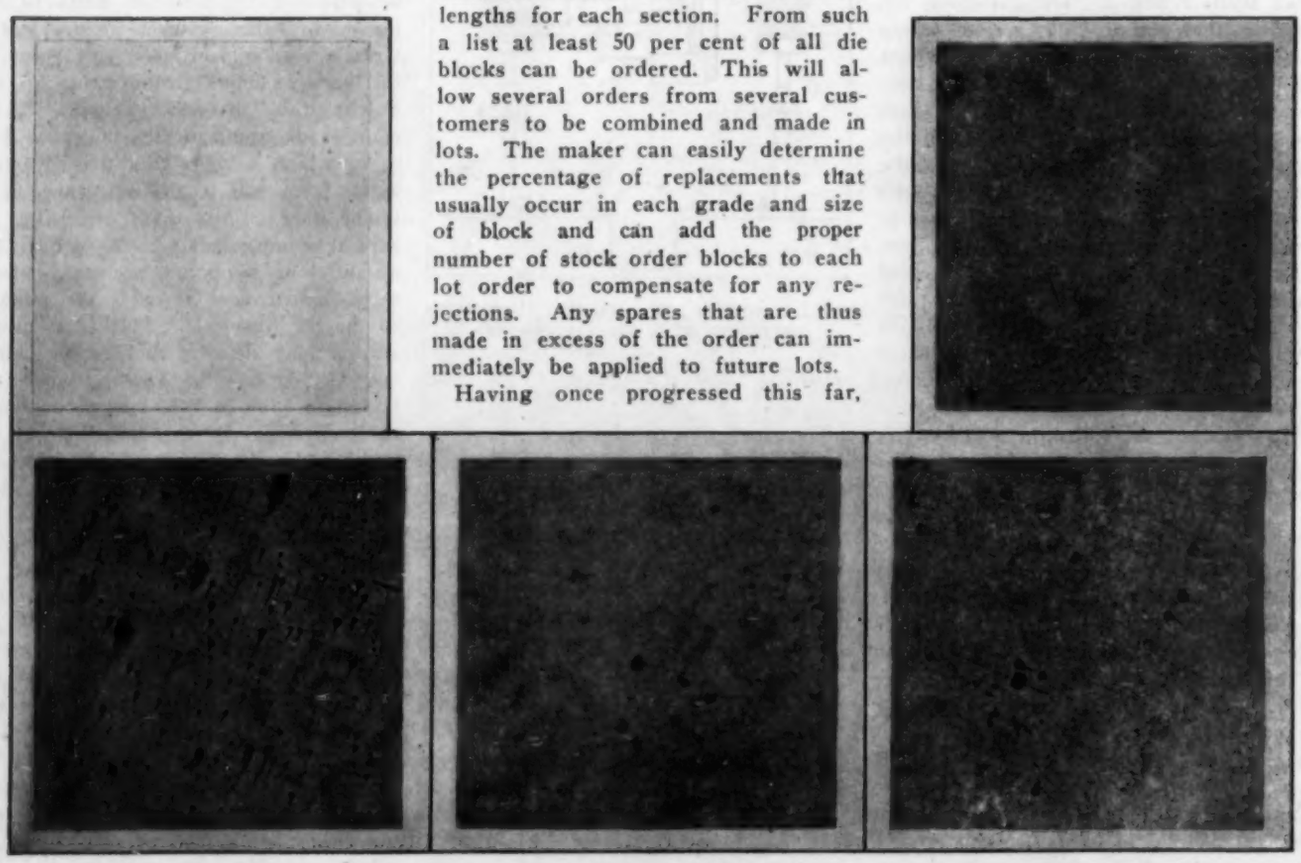
Standardizing Block Sizes

The users can make up a list of standard sections with a few standard lengths for each section. From such a list at least 50 per cent of all die blocks can be ordered. This will allow several orders from several customers to be combined and made in lots. The maker can easily determine the percentage of replacements that usually occur in each grade and size of block and can add the proper number of stock order blocks to each lot order to compensate for any rejections. Any spares that are thus made in excess of the order can immediately be applied to future lots.

Having once progressed this far, it is only one step further for the maker to manufacture standardized sizes on stock orders entirely and ship from stock almost immediately. The order book will show the popular sizes and approximately how many of each size must be carried in stock to meet the demands of the trade. It costs considerable money to carry stock die blocks because the stock does not turn over fast enough owing to the fact that there are so many sizes. Not only will lot orders reduce the cost of blocks and insure much faster manufacture of all standard sizes but it will materially aid the delivery of those blocks which must be made up to special sizes because it reduces the number of orders going through the shop.

The kind and quality of steel used in making die blocks is very important to the user and the maker. Steels made by different processes or even by

From a paper presented at the Atlantic City meeting of the American Drop Forge association, May 17-19. The author, C. B. Porter, is president, Sizer Forge Co., Buffalo.



Basic Electric Ingot
Basic Open-Hearth Billet

Basic Open-Hearth Ingot

Crucible Ingot
Acid Open-Hearth Ingot

MICROPHOTOGRAPHS OF SPECIMENS OF STEEL MADE BY VARIOUS PROCESSES POLISHED AND MAGNIFIED 35 DIAMETERS. THE SPOTS INDICATE NON-METALLIC INCLUSIONS AND BLOW HOLES

different methods under the same process may give different results in a highly tempered die block. It is just as easy to meet a chemical specification in bad steel as in good steel but no amount of forging or heat treating will remove pipes, blow holes or nonmetallic inclusions which are called sonims by the metallurgist and "dirt in the steel" by the layman.

Explains Formation of Inclusions

Nonmetallic inclusions in steel comprise foreign matter that is held in suspension in the liquid steel. If liquid steel is poured into ingot molds before it is thoroughly cleaned of foreign matter, these nonmetallic inclusions freeze into the steel and show up under the microscope as little specks or pit marks. Unfortunately sonims have a tendency to segregate or get together and are the basic cause of many checks. Sonims are abrasive and dull the edge of cutting tools in proportion to their presence and often lead to the conclusion that steel is very hard because the tools dull quickly. The microscopic photographs of steels made by different processes reproduced in the accompanying illustrations are aimed to present a fair average of all samples secured from time to time but they do not mean that both good and bad steel cannot be made by each process.

The cheapest steel to use is in billet form supplied by the rolling mills. The die block manufacturer who uses forging ingots must add about $30 per ton to the cost of forging ingots to allow for cogging down to billet size and for the riser discard. Allowing for this additional cogging expense when using forging ingots, the relative cost of various steels may be expressed as: Basic billets from the rollings mills, $65; basic forging ingots, $95; acid forging ingots, $100, and electric forging ingots, $105.

If rolling mill billets are good enough for die blocks then the makers should be discouraged from using high grade steels that increase the cost of blocks. If the highest grades of steels are desirable then why put makers using that class of steel on a competitive basis with those using ordinary rolling mill billets? If the information given the writer that the cost of sinking an impression usually costs at least five times as much as the die block, is correct, it would seem that the best steel would prove the cheaper in the long run.

Length Is Factor in Forging

The method of forging die blocks is a problem that must be mostly decided by the manufacturer but there is one point on which maker and user should agree. It is customary to forge blocks on all six sides unless the length is too great to go under the press or hammer or unless the length is so great in proportion to the section that end forging bends rather than upsets the block. If the block bends there can be no appreciable gain in quality by end forging while the bending may strain the corners of the blocks especially if they have cooled to a dark color. I believe there is a maximum length for each section of die blocks, expressed in terms of its sectional dimensions, beyond which it is advisable to forge blocks in multiples and machine cut to length.

Need Standard Treatment

The necessary requirements in annealing and grain refining heat treatments should be standardized by the users and makers. This applies only to those grades of die blocks which are subsequently hardened by the user. There seems to be some diversity of opinion as to just what heat treatment the maker should give each block but the writer personally believes that all blocks should receive at least one anneal to relieve forging strains and one grain refining heat treatment before leaving the maker's shop. This insures a more uniform quality for the die sinkers and hardeners to work on and, as it costs about half a cent a pound for each separate heat treatment, this is a point that should be standardized.

There are several methods of hardening die blocks in use both among the makers and the users but especially among the users. It would be a mutual protection if makers and users could arrive at some definite conclusion on this important point.

Recommends Standard Screw Threads

A PARTIAL report of the national screw thread commission, containing recommendations by which it is expected the variety of screw threads now in general use will be reduced through standardization, has been made. It covers only those threads, sizes, types and systems which are of importance by their extensive use and utility but, it is pointed out, there remains much to be accomplished along the lines of standardization of special, important threads and of maintaining progress in the standardization work in keeping with the developments of manufacturing conditions.

The national screw thread commission is headed by Dr. S. W. Stratton, director of the bureau of standards, Washington, D. C., as chairman. Its membership includes Lieut. Col. E. C. Peck and Capt. John O. Johnson, of the United States army, Com. L. M. McNair and Com. N. H. Wright, of the United States navy, James Hartness, vice chairman, and F. O. Wells, nominated by the American Society of Mechanical Engineers, and H. T. Herr and E. H. Ehrman, nominated by the Society of Automotive Engineers. H. W. Bearce is general secretary and H. L. Van Keuren is executive secretary.

Nontechnical words are used in the report, as far as the commission found practicable, in order to best convey to the producer and user of screw threads the information presented. A section of the report is given to terminology under which definitions, symbols and illustrations showing terminology are submitted. Definitions are divided into two classes, one of words relating to screw threads and the other of words relating to classification and tolerances. The report points out that definitions of terms which are elementary in character are intentionally omitted.

Recommends Form Thread Profile

The form of thread is discussed in an individual section of the report. The commission recommends a national form of thread profile formerly known as the United States standard or Sellers' profile, to be known now as the national form of thread. It is shown in Fig. 1. The report states:

"The national form of thread profile shall be used for all screw thread work except when otherwise specified for special purposes.

"The basic angle of thread *A* between the sides of the thread measured in an axial plane shall be 60 degrees. The line bisecting this 60 degree angle shall be perpendicular to the axis of the screw thread. The basic flat at the root and crest of the thread form will be $\frac{1}{8} \times p$, or $0.125 \times p$. The basic depth of the thread form will be

$$0.649519 \times p = \frac{0.649519}{n}$$

Where p = pitch in inches
n = number of threads per inch

"There are indicated in Fig. 1 the relations as specified herein, for the national form of thread for the minimum nut and maximum screw, medium fit.

"A clearance shall be provided at the minor diameter of the nut by re-

moving the thread form at the crest by an amount equal to 1/6 to 1/4 of the basic thread depth.

"A clearance at the major diameter of the nut shall be provided by decreasing the depth of the truncation triangle by an amount equal to 1/8 to 3/8 of its theoretical value."

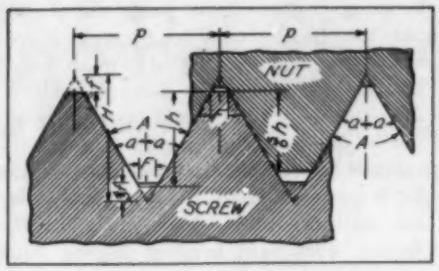
Elimination of all unnecessary sizes of screw threads, at the same time making use of predominating sizes, is the aim of the commission, the report says. It is pointed out that "while from certain standpoints it would have been desirable to make simplifications in the thread systems, it is believed that any radical change at the present would interfere with manufacturing conditions and would involve great economic loss." With this idea in mind the commission has recommended five series: National coarse, national fine, national fire hose coupling, national hose coupling and national pipe threads series.

Specifications Are Given

In the national coarse and the national fine thread series, the tabulated standards show the numbered and fractional sizes and the number of threads per inch for each size, under identification; the major diameter, the pitch diameter and the minor diameter, for each size, under basic diameters; and the metric equivalent of the major diameter, the pitch and the depth of threads for each size, under thread data. For the national fire hose and national hose basic minimum couplings and basic maximum nipples the tables indicate the nominal size, number of threads per inch, pitch, depth of thread, major diameter in both millimeters and inches, pitch diameter, minor diameter and allowance. For the national pipe threads the commission has adopted, with a few changes, the *Manual of American Standard Pipe Threads*, prepared by a committee of manufacturers of fittings and valves.

"There are established for general use, unless otherwise specified, four distinct classes of screw thread fits with supervisions," says the report. "These classes are for the purpose of insuring the interchangeable manufacture of screw thread parts throughout the country."

The commission then names the



NATIONAL FORM OF THREAD PROFILE

classes, loose fit, medium fit, close fit and wrench fit. The report contains specifiactions for each of these fits except wrench fit for which, it is said, tolerances and allowances are not specified because of a lack of data.

For the production of interchangeable parts, the commission's report maintains the necessity of an adequate gaging system. It is urged that certain fundamentals should be adopted which would serve to unite the various gaging systems now in operation. For this the commission suggests standard master gages, limit master gages, inspection gages and working gages. The report makes specifications for each of these classes.

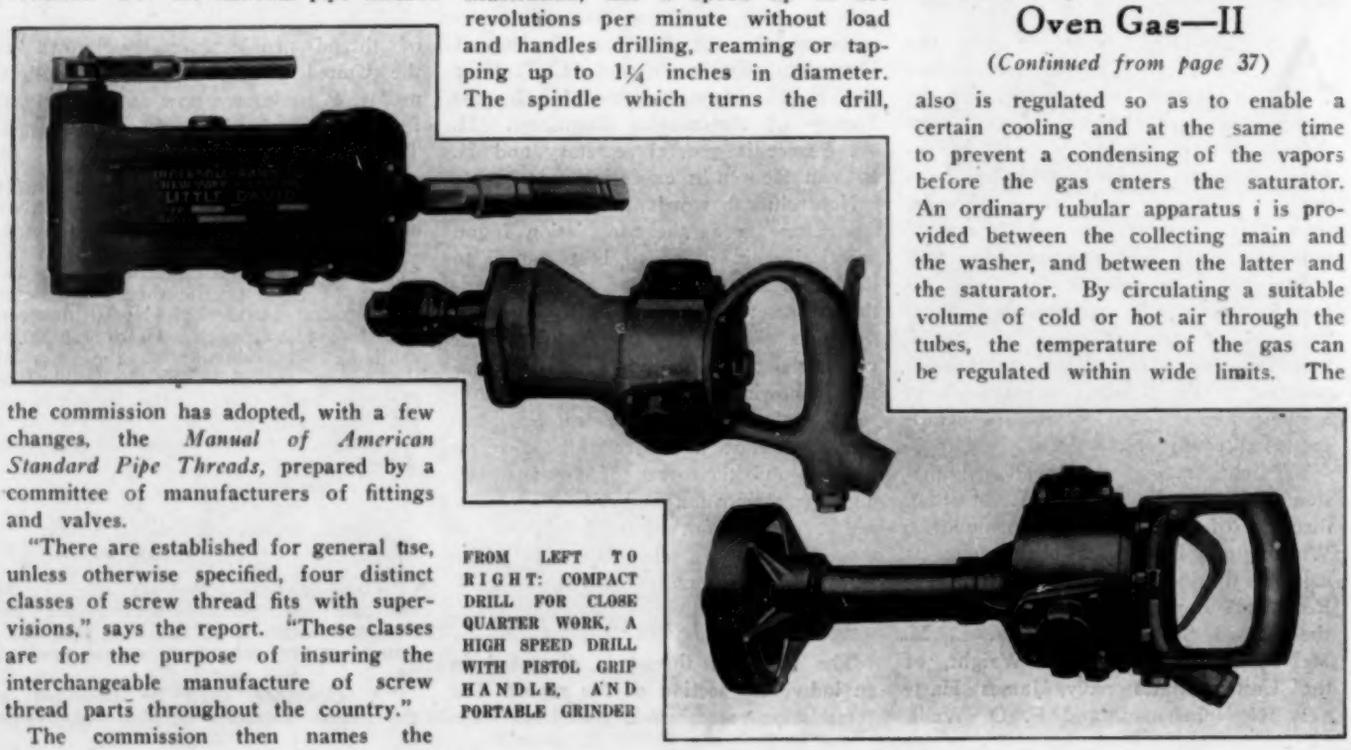
Designs Pneumatic Tools for Light Work

Several new pneumatic tools, including small drills and grinders, have been developed by the Ingersoll-Rand Co., New York to meet needs to which heavier tools could not easily be adapted.

The drill for close quarter work shown at the left of the accompanying illustration, has a speed up to 250 revolutions per minute without load and handles drilling, reaming or tapping up to 1¼ inches in diameter. The spindle which turns the drill, reamer or tap is operated by three rocking levers directly connected to pistons through connected rods. The motor is of the three-cylinder type with pistons acting at right angles to the levers. One ratchet pawl is always in contact with a tooth of the spindle.

Two types of the high-speed pneumatic grinders have been designed, differing only in the throttle and handle. One having the closed type of inside trigger handle is shown at the right; the other is fitted with the rolling type of throttle handle. These tools run at a free speed of 4200 revolutions per minute and are designed for grinding, buffing or polishing. Each has a three-cylinder motor which runs in a bath of oil. The valve is integral with the crankshaft. The piston and connecting rods are of unique construction, ball and roller bearings being used. The removal of a few screws enables the handle to be lifted out, exposing the entire mechanism and making inspection easy.

The lightweight drills are in two styles, one having the pistol grip type of handle, as shown in the center of the illustration, while the other is equipped with a breast plate and rolling throttle handle. These drills run at 2000 revolutions and take twist drills from the smallest sizes up to 3/8-inch diameter. The motors are somewhat similar to those used in the grinders, the cylinders being separate iron castings, easily accessible, renewable and interchangeable.



FROM LEFT TO RIGHT: COMPACT DRILL FOR CLOSE QUARTER WORK, A HIGH SPEED DRILL WITH PISTOL GRIP HANDLE, AND PORTABLE GRINDER

Removing Tar from Coke Oven Gas—II

(*Continued from page* 37)

also is regulated so as to enable a certain cooling and at the same time to prevent a condensing of the vapors before the gas enters the saturator. An ordinary tubular apparatus i is provided between the collecting main and the washer, and between the latter and the saturator. By circulating a suitable volume of cold or hot air through the tubes, the temperature of the gas can be regulated within wide limits. The

air is forced through the tubes by fans *k* and *l* which draw cold air through the pipes *n* from the atmosphere or hot air from the chimney flue *m* of the ovens. To simplify the drawing, only three sections of the washer *d* are shown with tar inlet *c* and outlet *d*, whereas actually every section is arranged in this way. The outlet pipes *e* deliver the tar to a tank from which a certain amount is pumped back again to the collecting main by the pump *h*, to return in the described manner, while the surplus tar runs through the pipe *g* to the storage tank.

Late News of the Societies

Notes on Past and Coming Meetings of National and Local Trade and Technical Organizations

PREPARATION of the program for the ninth annual safety congress of the National Safety council, which will be held in the Auditorium at Milwaukee, Sept. 27 to Oct. 1, is going forward. Acceptances have been received already from 179 speakers, practically all authorities on various phases of accident prevention or industrial health work. Among the speakers are Samuel O. Dunn, editor of *Railway Age*, Dr. Harry E. Mock of Rush Medical college, Chicago, who is author of *Industrial Medicine and Surgery*, James Newton Gunn, president of the United States Tire Co., Dr. Otto B. Geier, president of the American Association of Industrial Physicians and Surgeons, and Dr. J. J. Moorehead, formerly lieutenant-colonel, United States army.

* * *

Iron and Coke Makers Meet

The use of nut coke in blast furnaces was the subject of a paper read by J. B. Rogers in opening the discussion of that subject at the recent meeting of the Southern Ohio Pig Iron and Coke association at Ironton, O. It was pointed out that nut coke must be thoroughly screened in order to obtain good results and that being screened twice and subjected to much rough handling accounts for its cleanliness.

A standard method of sampling ores at blast furnace plants is being worked out, the committee on sampling and analysis reported. The need of uniform methods in sampling coke also was stated. Steps are being taken toward this end, it was stated. Complaints that analyses of coke received at some furnaces did not agree with the analyses of the 24 hours run at coke ovens was explained as due to the ash variable in coal now being put into ovens.

President R. H. Sweetser of the association commended the furnace operators for their work in connection with accident prevention. One furnace reported only two compensation cases in a year while another suffered no loss of time because of accidents in three months.

* * *

Pittsburgh Electrical Engineers Elect

Members of the Pittsburgh section of the American Institute of Electrical Engineers, in the chamber of commerce that city, Tuesday June 8 elected the following offiers for the ensuing year: Chairman, B. C. Dennison; secretary-treasurer, H. W. Smith; and new members of the board of directors, W. H. Shafer, A. L. Broomall, O. Needham and J. V. Peters.

* * *

Cleveland Engineers Elect

At a recent meeting of the Cleveland Engineering society the following officers were elected: President, W. J. Carter, Carter, Richardson and Griffith; vice president, F. H. Vose, Case School of Applied Science; secretary, J. F. Oberlin, Fay, Oberlin and Fay; treasurer, A. F. Blaser, railway commissioners office; librarian, W. G. Stephan, Hale Stephan Co. The new board of directors consists of Willard Brown, Upson Nut Co.; Sam W. Emerson; B. A. Tozzer, Pratt & Whitney Co.; B. D. Quarris, American Steel & Wire Co.; F. L. Sessions; and F. E. Bissell, A. S. Hecker Co. The officers and directors together with past presidents, E. S. Carman and E. B. Thomas, make up the executive committee.

* * *

Cost Accountants Form Society

Organization of the Industrial Cost Accountants association was effected, June 18, in Chicago, by representatives of manufacturers in various lines of industry. The objects of the new association include standardizing accounting and cost terminology and adopting standard governing principles; promoting active co-operation and interchange of experiences between representatives of manufacturers engaged in similar activities; educating members and their business associates in the complex economic problems of industry; assisting standardization committees in each line of industry in establishing uniform accounting and cost practices; and acting as a clearing house in distributing the development in cost practices to the end that uniformity, once established, may be constantly maintained. Applicants for membership must be placed in nomination by an industrial firm, corporation, or trade organization, which must certify that the proposed member is either the owner, officer, or a permanent employe actively engaged in the supervision of costs in such firm, corporation, or trade organization. Persons are not eligible to membership who are engaged professionally in the public practice of cost accounting on their own account, or in the employ of others so engaged.

The following officers were elected: President, M. F. Simmons, super-

(*Concluded on Page 44*)

Convention Calendar

July 22-24—Great Lakes-St. Lawrence River Tidewater congress. Meeting in Detroit. Address Tom L. Munger, secretary inland waterways committee, Detroit board of commerce, for information.

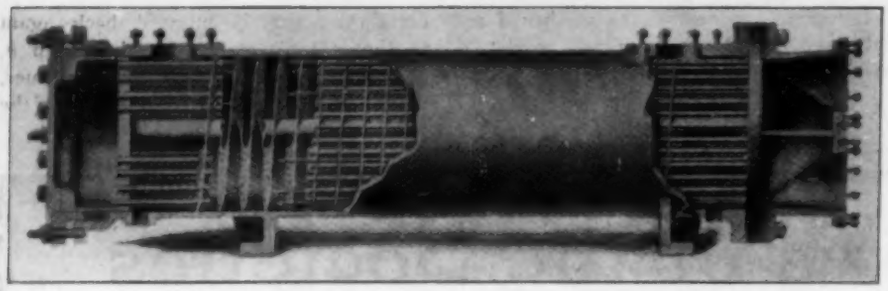
Aug. 20-Sept. 3—American Institute of Mining and Metallurgical Engineers. Lake Superior meeting starting from Buffalo, Aug. 20, on the steamer Tionesta, visiting iron and copper country of Lake Superior district, returning to Buffalo, Sept. 3, on the steamer Juniata. Bradley Stoughton, 29 West Thirty-ninth street, New York, is secretary.

Sept. 14-18—American Steel Treaters' society and Steel Treating Research society. Annual convention and exhibition, Commercial museum, Philadelphia. W. H. Eiseman, 208 N. Wabash avenue, Chicago, is secretary of the American Steel Treaters' society, and J. A. Pollak, Pollak Steel Co., Cincinnati, is secretary of the Steel Treating Research society.

Sept. 21-22—(British) Iron and Steel institute. Autumn meeting at Cardiff, Wales.

Oct. 4-8—American Foundrymen's association. Annual convention and exhibition, Ohio state exhibition grounds, Columbus, O. C. E. Hoyt, Marquette building, 140 South Dearborn street, Chicago, is secretary.

Oct. 4-8—Institute of metals division of the A. I. M. E. Annual meeting with American Foundrymen's association at Columbus, O.



SIDE ELEVATION SHOWING INTERIOR CONSTRUCTION OF WHIRLING COOLER FOR OIL

Device Cools Lubricating and Quenching Oil

For cooling lubricating and quenching oil the Griscom-Russell Co., New York, has developed a cooler in which the oil is constantly circulated keeping it at a constant temperature. The device permits the continued use of the original quantity of oil and its maintenance at the proper viscosity. The oil whirls in a path made by a helical baffle which directs the flow without retarding its progress. The baffle forces the oil into contact with the cooling surface. The shell of the cooler is of cast iron and the tubes of seamless drawn brass or copper expanded into a fixed tube plate at one end and into a floating head at the other. This arrangement permits expansion and contraction without strain on the tube joints. The accompanying illustration shows the interior construction of the cooler.

Designs New Saw Blade

In order to do away with the chattering or jumping sideways of hack saw blades, the Peerless Machine Co., Racine, Wis., has designed a blade with fine teeth at the toe and coarser teeth on the remainder of the blade. These are of two types, an all hard tungsten steel and a flexible, carbon steel blade. The former is toughened for hard service and is intended for use by tool makers and mechanics. Hardened on the tooth edge only, with the remainder of the blade toughened to prevent excess stretch when under tension, the carbon steel type is adaptable for use in plumbing, electrical and steam fitting work. It can also be used in other trades where the material to be cut is of thin, irregular section, and where the work cannot be held rigidly in a vise or reached from an easy sawing position.

The advantages of the new design are that at the beginning of the sawing and throughout its continuation the fine teeth at the toe readily open the cut and prepare the way for the faster cutting ing of the coarser teeth which do the work at higher speed.

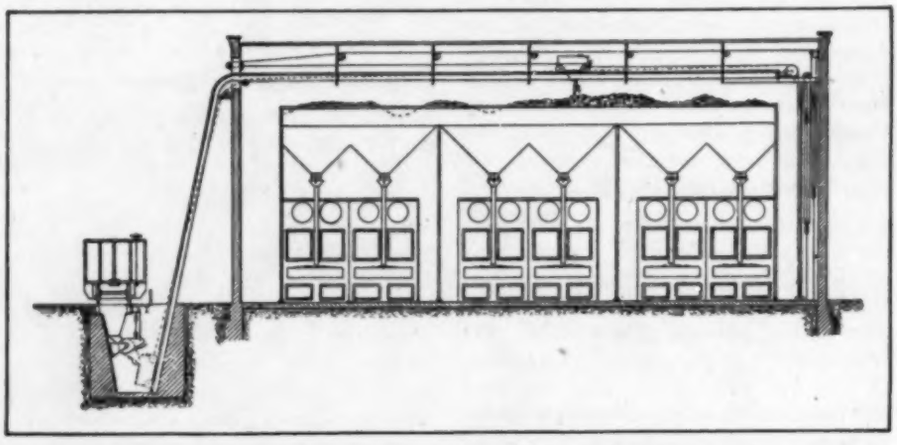
Skip Runs on Horizontal and Vertical Track

A new adaptation of the common skiphoist, by which the car moves over a vertical and horizontal track, has been patented by Warren Travell, of the engineering staff of the Exeter Machine Works, Inc., Boston, which is manufacturing the apparatus. In order that the skip may be able to carry its load vertically and horizontally without spilling, it has been designed with an opening in the upper portion of the front side for receiving its load and single or double hinged doors on the opposite side for discharging the load when the skip is running on a horizontal track. A typical installation is shown in the accompanying illustration.

The doors or valves of the skip are held in closed position by a latch. Discharging of the skip's load is accomplished by the tripping of this latch. For installations having a fixed point of discharge, the latch-trip is fixed in position alongside of the track. However, if it is desirable to dump the skip at different points along its horizontal travel the trip may be easily shifted along the track as required. A further improvement consists in having the trip carried on a traveling frame moved by a hand winch.

The entire weight of the skip and half of its load is balanced by a counterweight which operates only during the vertical motion of the skip. In lowering the empty skip, the motor works to raise the counterweight, doing the same amount of work as in hoisting. As the weight of the skip is frequently as great as that of the load itself, the effect of this arrangement is to reduce the size of the motor required and the unbalanced strains in the hoisting machine. A second counterweight of nominal size is employed to take up slack rope paid out from the hoisting drum during horizontal travel of the skip.

On reaching the top of the vertical rise, the skip engages and carries along with it a bar which is connected by cable to a third counterweight which operates to pull the skip backward after being discharged. Automatic switches are provided for reversing the motor at both ends of the run.



SECTION SHOWING TYPICAL INSTALLATION OF SKIP DESIGNED FOR HOISTING AND CONVEYING

HACK SAW BLADE HAS FINE TEETH ON TOE TO PREVENT CHATTERING AND JUMPING AT BEGINNING OF CUT

Proposes Standards for Shapes

Sectional Committee of American Engineering Standards Committee Formulates Basis for Anglo-American Standards for Structural Shapes—British Bulb Angle Sections and New Channel and Beam Sections Recommended.

RECOMMENDATIONS for establishing Anglo - American standards for structural shapes, which were formulated at a meeting of a sectional committee organized under the auspices of the American engineering standards committee, have just been announced through the office of the secretary of the association. It is understood that the recommendations will be submitted to the sponsor organizations, to the American engineering standards committee and to the British Engineering Standards association as a basis for common Anglo-American standards. The essential features of the recommendations follow:

1. The adoption of the decimal system for the expression of dimensions, thicknesses and other elements of order practice.

2. The adoption as an Anglo-American standard of the standard order practice adopted by the Association of American Steel Manufacturers on Feb. 20, 1920, under which structural shapes are to be ordered by weights per foot and not by thickness.

3. The adoption as an Anglo-American standard of American standard practice as it relates to ranges of thicknesses, methods of computation and methods of publication.

4. The adoption of definite ranges in thicknesses of angles and other structural shapes, under which are established two zones of variations between minimum and maximum thicknesses. Under 0.60 inch thick variations are fixed at four one hundredths inch (0.04 inch) and above 0.60 inch thick at eight one hundredths inch (0.08 inch).

5. Included in the list of angles is an equal angle (9 x 9) and four unequal angles (8 x 4, 9 x 4, 9 x 6 and 10 x 4) which are not now rolled in United States, but are subject to the considerations which weigh with manufacturers when new rolls are contemplated.

6. The adoption of a new line of bulb angle sections as proposed by the British Engineering Standards association that are recommended on account of their greater efficiency as compared with present British and American standards.

7. The adoption of a single line of channel sections with a 5-degree taper to displace the present two American lines, the structural line with its flange taper 9 degrees 27 minutes 42 seconds and the shipbuilding line with its flange taper of 2 degrees. This line of channel sections is not quite in accord with that proposed by the British Engineering Standards association, but is believed to be more suitable to the requirements of the American trade and better proportioned.

8. The adoption of a new line of beam sections to take the place of the present American standards adopted in 1896. These sections have wider flanges than present American standards and do not agree very closely with the British proposals, but are believed by the sectional committee to be more nearly in accord with the recent developments in the fabrication of buildings and bridges.

The report of the sectional committee is the outgrowth of a movement started July 2, 1917, when a number of steelmakers in conference in Washington, adopted a code of American standard practice for structural steel for ships. Shortly after this meeting the Emergency Fleet corporation undertook an investigation to ascertain the number of structural shapes used in shipbuilding and the possibility of their standardization. Again on Nov. 19, 1918, another conference of steelmakers, convinced that the British standard sections of ship channels and

Proposed Channels

(See Fig. 1)

—Dimensions in inches— a	b	c	d	Moment of Inertia I in.⁴	Section Modulus S in.³	Weight per foot pounds
3	1½	.17	.23	1.8	1.2	3.88
4	2	.19	.27	4.4	2.2	6.1
5	2½	.21	.32	10.2	4.1	8.8
6	2½	.22	.33	16.0	5.3	9.8
6	3½	.32	.46	28.2	9.4	16.8
7	2¾	.23	.35	26.0	7.4	11.7
7	3½	.33	.48	41.7	11.9	18.6
8	2¾	.24	.36	36.6	9.1	12.9
8	3½	.34	.50	58.9	14.7	20.4
9	3	.26	.39	55.3	12.3	15.5
9	3½	.35	.52	80.1	17.8	22.2
10	3	.28	.42	75.7	15.1	17.6
10	3½	.36	.54	105.7	21.1	24.1
12	3½	.32	.48	147.2	24.5	23.8
12	3½	.38	.58	172.6	28.8	28.2
12	4	.40	.60	197.7	33.0	31.5
13	4	.41	.61	243.2	37.4	33.5
15	4	.42	.62	347.4	46.3	37.0
18	4	.44	.64	557.1	61.9	42.9

Proposed Beams

(See Fig. 3)

—Dimension in inches— a	b	c	d	Moment of Inertia I in.⁴	Section Modulus S in.³	Weight per foot pounds
3	2.66	.18	.27	2.9	1.9	6.7
4	3.00	.20	.29	6.6	3.3	8.6
5	3.33	.22	.31	12.9	5.1	10.6
6	3.66	.24	.33	22.4	7.5	13.0
7	4.00	.26	.35	36.3	10.4	15.5
8	4.33	.28	.37	55.4	13.9	18.3
9	4.66	.30	.39	81.0	18.0	21.3
10	5.00	.32	.42	116.6	23.3	24.8
12	5.50	.36	.48	215.0	35.8	32.1
15	6.00	.40	.57	443.7	59.2	42.9
18	6.50	.44	.66	814.1	90.5	55.0
21	7.00	.47	.75	1365.7	130.1	67.8
24	7.50	.50	.84	2151.7	179.3	81.9
27	8.00	.53	.93	3225.3	238.9	97.1

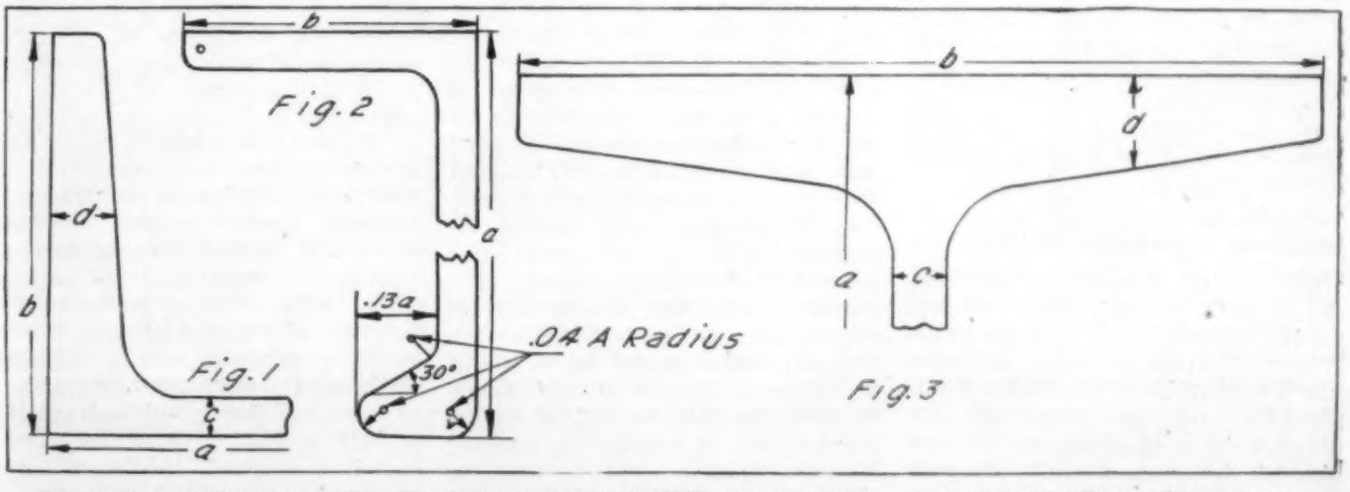


FIG. 1—CROSS SECTION OF CHANNELS. FIG. 2—SHAPES AND PROPORTIONS OF BULB ANGLES. FIG. 3—CROSS SECTION OF PROPOSED BEAMS

shipbuilding bulb angles appeared to be better adapted to economical manufacture than American standard sections decided that thereafter rolls not then conforming to British standards be redressed as soon as possible to roll sections conforming as closely as possible to British standards. It later was discovered that these British standards, which were those adopted by the British Engineering Standards association, had been in the process of revision when the war intervened. When the action of the American steelmakers became known in England, the British Engineering Standards association offered to co-operate with the American structural trade in formulating common Anglo-American standards for structural shapes.

At this stage, at the instance of the Association of American Steel Manufacturers, a sectional committee on steel shapes was organized under the auspices of the American engineering standards committee. This sectional committee consisted of 15 members representing the American Bureau of Shipping, the American Society of Civil Engineers, the Association of American Steel Manufacturers, the Railway Car Manufacturers' association, the Society of Naval Architects and Marine Engineers, and the United States navy.

The recommendations appearing above were formulated by this committee at a meeting held April 27, 1920. The proposed lines of channel beam and bulb sections are shown in Figs. 1, 2 and 3.

News of Societies

(*Concluded from Page* 41)

visor of costs, General Electric Co., Schenectady, N. Y.; first vice president, C. H. Smith, director of clerical operations of the Westinghouse Air Brake Co., Wilmerding, Pa.; second vice president, Roland H. Zinn, chief of the cost accounting bureau of the Tanner's council, New York; and secretary-treasurer, A. A. Alles Jr., secretary of the Fawcus Machine Co. Headquarters of the association will be 1501 Peoples Bank building, Pittsburgh.

* * *

Engineers Visit Valley Mill

Six hundred members of the Pittsburgh and Cleveland district sections of the Association of Iron and Steel Electrical Engineers were guests of the Trumbull Steel Co., Warren, O., Saturday for an inspection trip through the mills. Following the tour through the company's mills the engineers returned to Youngstown, O., where a banquet and a technical session were held at the Ohio hotel. The feature of the technical session was a paper prepared by A. W. Mohrman and W. F. Rese of the Trumbull Steel Co. This paper dealt with the electrical installation of strip mills.

The rapid advancement that has been made in strip mill equipment in recent years and the advantages of electric over steam driven strip mills was reviewed. The authors described in detail various types of strip mills including hand mills, Belgian train, continuous and semicontinuous mills.

New construction now under way at the plant of the Trumbull Steel Co. was described to visitors while on their inspection tour. This consists of a 1200-foot building, which will house a 14-inch continuous type strip mill to be driven by two 1250-horsepower, and four 800-horsepower direct current motors. This mill when completed will roll 30-foot bars of various weights. Paralleling this building is a 1100-foot building now under construction for a 9-inch hot strip mill. The present cold strip department will be added to by a 20 x 24-inch tandem mill, a 16 x 20-inch and an 8 x 10-inch tandem mill with two 8-inch combination mills, three 8-inch single mills and three 12-inch single mills and one 12 x 20-inch single mill with auxiliary equipment. This will more than double the capacity of the present cold-strip department. In addition the annealing of the cold strip mill now is being doubled.

* * *

Stoker Association Names Officers

At a recent meeting of the Stoker Manufacturers association, Lakewood, N. J., the following officers and members of the executive committee were appointed: R. Sanford Riley, president; M. Alpern, vice president; A. G. Pratt, treasurer; J. G. Worker, secretary, and S. A. Armstrong and H. A. Hatton. President Riley told the members that the industry which the association represents has grown to a position of importance due partly to the increasing number of good men entering the field. He claimed that the chief factor in profit is service. He mentioned the work of the organization in the fuel conservation program of the government. Mr. Worker stated that the function of the modern trade association is to furnish information and be of service to its members. An attempt should be made to stimulate interest among the members to better their products by maintaining a high standard of admission into the association. He emphasized the fact that the society stands for honest merchandising and for putting the stoker business on the highest level of business ethics.

Future Bookings

Lead to Quotation Refusals—Scarcity Continues in Coal Tar Products

New York, June 28.—Scarcity of coal tar products continues. This is true especially in naphthalene, producers being booked so far in advance that they are not so much as quoting a nominal figure. There are some scattered lots held in the outside market, but here again sellers are backward about taking on business. Where orders are taken, the prices range from 16 to 17 cents.

In benzol, producers and brokers alike are taking on some spot business, although it amounts to nothing large in the aggregate. Future business is not being considered. Prices on pure benzol are holding steady at 30 to 35½ cents, f.o.b. works. Solvent naphtha is also being sold only in spot quantities, sellers being booked so far ahead they do not care to risk the uncertainty of still later contracts. Quotations are unchanged at 25 to 31½ cents, f.o.b. works.

Toluol is in fair demand, but owing to the heavy demand for benzol and solvent naphtha, this product is in good supply. There is no tendency, however, among sellers to shade prices, the market holding firm at 31½ to 36½ cents, producers' plants.

With sellers sold up well over the last half, no signs of shading in sulphate of ammonia are in evidence. As for several weeks past, the market on spot and future orders is quoted at $4.50 to $4.60, f.o.b. works. Trading is comprised chiefly of spot orders.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants	
Pure benzol	$0.30 to 36½
Toluol	.31 to 36½
Solvent naphtha	.25 to 31½
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	nominal
Napthalene, balls	nominal
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$4.50 to 4.60

Contract

Pure benzol	nominal
Toluol	nominal
Solvent naphtha	nominal
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	nominal
Naphthalene, balls	nominal
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$4.50 to $4.60

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

DR. GEORGE S. WEBSTER the newly elected president of the American Society for Testing Materials is a Philadelphian. Graduating, in 1875, from the civil engineering school of the University of Pennsylvania located at that city, he became affiliated with the engineering service of Philadelphia and has been connected with the engineering work of that city ever since. Dr. Webster served as chief engineer of the city from 1892 to Jan. 1, 1916, when he was appointed director of wharves, docks and ferries. This position he held until this year when he was reappointed chief engineer. Besides his regular work he also had charge of the bureau of filtration for one year, and for a while was acting transit commissioner for the city. In all these positions Dr. Webster has been in close touch with the testing of materials. One of his achievements in this line was the establishment of a municipal testing laboratory. This laboratory was first used only for cement testing but its scope has been gradually increased until now all materials and supplies used by the city are tested by the laboratory force. Interested in the development of his profession he has been active in a number of societies and is past president of the Philadelphia Engineers club; the Philadelphia association of the American Society of Civil Engineers; and of the Sanitary Engineering section of the American Public Health association. Dr. Webster is at present one of the three representatives of the American Society of Civil Engineers on the engineering division of the National Research council. His alma mater confered on him the degree of Doctor of Science in 1910.

A. Burton Cohen has resigned as concrete engineer for the Delaware, Lackawanna & Western railroad to enter private practice as a consulting engineer at 1 Madison avenue, New York City. He will devote his attention to reinforced concrete design and construction, including buildings, bridges and railroad structures.

J. W. De Haas, director of the Dutch East Indian division of the American Steel Export Co., New York, has left for an extended trip to the Dutch East Indies, Straits Settlements, Federated Malay States, Siam, Indo-China and Burma, in the interest of his company. He will be gone for about a year.

John D. Missroom, head of the manufacturing department of the Clinton, Mass., works of the Wickwire Spencer Steel Corp., Worcester, Mass., and Buffalo, has resigned to take effect Aug. 1. He was the first superintendent of the Clinton Wire Cloth Co., and became agent when it was taken over by the Clinton-Wright Wire Co., which is now merged as the Wickwire Spencer Steel Corp.

DR. GEORGE S. WEBSTER

Elbert Rogers, formerly purchasing agent of the Wickwire Steel Co., Buffalo, has been appointed general purchasing agent of the Wickwire-Spencer Steel Corp., Worcester, Mass., and Buffalo, to succeed Albert C. Lorion, Worcester, resigned. Charles H. Sparrell, formerly purchasing agent of the Spencer Wire Co., has been appointed purchasing agent for the Worcester district and will be assisted by George B. Cunningham, formerly with the Wright Wire Co., and F. J. Ekengren, formerly of the North works of the American Steel & Wire Co., Worcester.

Ad J. Hartman, new president of the Pittsburgh Foundrymen's association, is manager of the Frank-Kneeland department of the United Engineering & Foundry Co., Pittsburgh. He has been with that company since 1895, having started as office boy in the Frank-Kneeland Machine Co., which subsequently became part of the United Engineering & Foundry Co. He was born in Cincinnati April 19, 1881, coming to Pittsburgh as a boy. He attended the Pittsburgh public schools as well as one of the night technical schools. He has been manager of the Frank-Kneeland department of the United Engineering company since 1915.

Charles Gaspar, formerly of the Detroit office, has been made assistant manager of sales of the National Malleable Castings Co., at Cleveland. At one time Mr. Gaspar was in charge of the company's St. Louis office. L. W. DeWitt, formerly of the Chicago sales force, and recently transferred to Washington, succeeds Mr. Gaspar at Detroit, in looking after miscellaneous sales in the Michigan territory. George V. Martin goes to Washington to succeed Mr. DeWitt. Elmer Juergens, purchasing agent at Cleveland for the National company, recently was chosen president of the Cleveland Purchasing Agents' association.

T. C. Allen, formerly comptroller of the Tacony Steel Co., has been appointed assistant to the president of the Penn Seaboard Steel Corp., Philadelphia. Mr. Allen was one of the early members of the Tacony organization, which he joined as comptroller of the Tacony Ordnance Corp. on Jan. 1, 1918. Previous to coming to Tacony he had been for two years assistant comptroller of the Remington Arms Co. of Delaware. He had also been auditor of the Maryland Coal & Coke Co. for five years prior to that. When the Tacony Ordnance Corp. consolidated with the Tacony Steel Co. Mr. Allen became comptroller of the larger organization with full supervision of all general and cost accounting.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

JAMES A. GALLIGAN, sales agent for Pickands, Brown & Co., Chicago, for the past 12 of the 14 years he has been connected with that firm, has been appointed sales manager and assistant to Vice President C. D. Caldwell, of the By-Products Coke Corp., at Chicago. The sale of coke by Pickands, Brown & Co., which has been in Mr. Galligan's charge, has been assumed by R. S. Dutton, manager of sales for all departments. F. L. Schulze has been appointed assistant sales agent for the coke department.

Mr. Galligan's change takes to the service of the By-Products Coke Corp. one of the best equipped men in the western coke industry. His 12-year experience in selling the output of the western coke plants has given him wide insight into the production and distribution of coke, a fact recognized when he was appointed in April, 1918, as district coke representative in charge of coke distribution in the Middle West under the United States fuel administration. In this position he allocated the output of all plants in Indiana, Illinois, Wisconsin and Missouri.

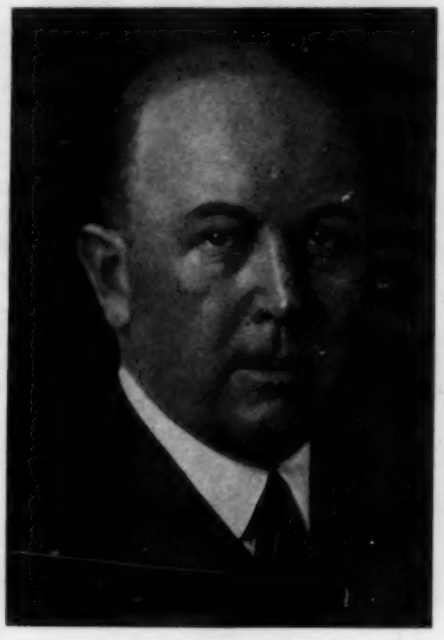
Mr. Galligan is a native of Milwaukee, and is 45 years of age. He began his business career at 16 years as stenographer in various connections and in 1899 entered the employment of the Edward P. Allis Co., at Milwaukee, and a couple of years later was made manager of the Elizabeth Mining Co. in the Black Hills, which was owned by Mr. Allis. In 1902 he joined the staff of the Allis-Chalmers Mfg. Co., advancing to assistant general purchasing agent. In 1906 he became salesman for Pickands, Brown & Co., in their Milwaukee office, being transferred to their Chicago office two years later to take charge of coke sales.

C. R. Robinson, vice president and general sales manager of the Lackawanna Steel Co., Buffalo, is convalescing from an attack of pneumonia.

Val Reich, superintendent of the Chattanooga Boiler & Tank Co., Chattanooga, Tenn., was seriously injured recently when his automobile collided with a telegraph pole.

Crit T. Collins, president of the Standard Oil Co., of Kentucky, which operates a large refinery, foundry and machine shop at Louisville, Ky., has resigned to become chairman of the board of directors, Samuel W. Coons, second vice president and district manager, becoming president.

John P. James, who formerly was special assistant to Commissioner Raymond B. Stevens, has been appointed



JAMES A. GALLIGAN

assistant secretary of the Emergency Fleet corporation. Admiral Benson, chairman of the board, announced today. A. B. Garges has been appointed to succeed R. E. Wells as staff assistant in charge of records and information of the division of operations.

William L. Brown, of F. R. Phillips & Sons Co., Philadelphia, Pittsburgh and New York, iron and steel merchants, sailed for Europe June 21, to visit his company's offices in London, England, and Milan, Italy.

W. C. Schrage has been elected president and treasurer in a reorganization of the Pittsburgh Shafting Co., Detroit. Thomas H. Booth is the new vice president and general manager of sales. Mr. Schrage has been with the company 15 years.

Daniel Warren, vice president of the American Trading Co., 25 Broad street, New York, left last week for South America to inspect the Brazilian and Argentine agencies of his company. Mr. Warren will be away for two months or more.

R. A. Sleicher, formerly vice president of the Edward A. Cassidy Co., New York, and prior to his affiliation with that corporation, vice president of the Troy Foundry & Machine Co., Troy, N. Y., has been appointed general manager of the Standard Process Steel Corp., Phillipsburg, N. J.

J. L. Harrison has been made district manager, with headquarters in the Peoples Gas building, Chicago, for the Newton Steel Co., Newton Falls, O. This company will move its general and sales offices to the Wick building, Youngstown, O., about July 15.

Thomas D. Raymond has been appointed superintendent at the plant of the Wickwire-Spencer Corp., Worcester, Mass., to succeed J. D. Missroon who is to retire Aug. 1. George W. Johnson has been named assistant superintendent succeeding Mr. Raymond. Mr. Missroon has been connected with the plant for 30 years.

Lee W. Van Cleave, of the Buck's Stove & Range Co., St. Louis, was re-elected president of the National Association of Stove Manufacturers at its recent annual convention. Other officers re-elected are: First vice president, Robert M. Leach, Weir Stove Co., Taunton, Mass.; second vice president, B. E. M. McCarthy, Phillips & Buttorff Mfg. Co., Nashville, Tenn.; treasurer, Walter M. Jones, Richmond Stove Co., Richmond, Va.; and secretary, R. S. Wood, 508 National State Bank building, New York City.

Thomas Dunbar, marine architect for the Howard Shipyards, Jeffersonville, Ind., has become affiliated with the John Eichleay Jr., Co., Pittsburgh, effective June 20. He was identified with the Howard organization for 15 years which was spent principally in construction of river boats. He established the steel boat plant of the company. During the war he was with Cox & Stevens, New York, marine architects, and designed steel boats for the government.

Contracts Let

For Mesabi Iron Co.'s First Unit—Coal Supplies Still Scant

Special Correspondence

Duluth, June 28.—The Mesabi Iron Co. is pushing the erection of its plant for treating and recovering low grade ores at its townsite at Babbitt on the eastern Mesabi range. W. Z. Swart, who was prominent in the development of the process, and is the engineer in charge of operations, has a force of over 300 men engaged in the work. All the contracts for machinery and tools for the first unit of the plant that when completed will entail an estimated investment of $3,000,000 have been let. The largest contract for the mill going to the Minneapolis Steel & Machinery Co. Though delays have arisen in obtaining deliveries of some of the materials and supplies owing to the railroad tieup and the shortage of cars, Mr. Swart is sanguine that the plant will be ready to go into operation by the spring of 1921.

Operators of iron mines on the Minnesota ranges are being still kept on the anxious seat through the difficulty in obtaining adequate supplies of coal. Operations and outputs of the mines are being sharply curtailed, practically all stripping work having been discontinued by the Oliver Mining Co. and the independents. As showing the effect of the congestion brought about through the delay in unloading ore cargoes at Lake Erie docks, it may be mentioned that on one day last week only one boat each was loaded out with ore at the Duluth, Missabe & Northern docks at Duluth and at the Great Northern docks at Allouez Bay, Superior. At the latter docks 32 steamers were scheduled to arrive and conditions promised to be better. Shipments of ore from the ranges are consequently being held up and they are being made in line with reports received regarding dock handling conditions from time to time.

Labor Shortage Closing Employment Agencies

New York, June 29.—Many employment agencies that did a big business before the war have suspended operations, while the few remaining are barely existing, according to a report by the Inter-Racial council. This situation is said to be due to the fact that the supply of unskilled labor for the industries and farms virtually has been exhausted. Owing to the small percentage of unskilled laborers among the immigrants arriving in the United States. The council's statement in part follows:

"Immigrant employment agencies are in many instances pooling their applicants to meet some of the demands for large numbers of workers. Among immigrant employment agencies in the downtown district and on the East Side that were visited, conditions generally were found to be the same in all of them. Those still operating have plenty of requests for men, but are able to supply them only for a small fraction of the jobs available.

"One of the oldest and largest of the agencies, formerly handling Polish, Russian, German Hungarian, Slovak, Ruthenian and Scandinavian laborers, reported it could give jobs to about 50 men daily, but that it is doing well if it finds workmen for eight or nine of the jobs each day. Many applicants for workers are from farmers offering $60 to $70 and $85 a month, with board and lodging. Common labor is offered $4 and more a day for a 10-hour day.

"Lack of immigration and better wages paid in industrial towns in the Middle West were the reasons assigned by several agencies for the shortage of workers here. A proprietor pointed to signs displayed outside his office calling for men by the hundreds, none of them 'strike-breaking' jobs, and displayed contracts for large numbers of men. One of the signs called for 500 men, 'foreigners only, $5 a day and free transportation,' but the only men he could get were 'floating' American laborers."

Co-operative Kitchen Is Given a Trial

The importance of supplying employes with good palatable meals at low cost is becoming more and more apparent among industrial plants. At the Sturtevant Mill Co. plant in Dorchester, Mass., the value of having some sort of an employes' co-operative restaurant has been recognized by the management, and with the idea of taking a preliminary experimental step before making plans for an extensive restaurant, a small cafeteria kitchen has been installed for the use of the office force. Costs are carefully kept as a guide in determining the nature of the larger project in view. The company furnishes the building and the kitchen equipment and pays the salary of the chef. The men pay only for the actual cost of the food consumed. Employes serve themselves and receive tea, coffee and butter free. Two girls from the office staff take turns each day in helping the chef serve the food from the kitchen to the dishes on the service counter. The menus are interesting in view of the present high costs of foods, in that they show what may be expected where all frills and service charges are eliminated. The Sturtevant Mill Co. manufactures crushing, grinding and screening machinery.

Iron and Steel Labor Is Decreased in May

Labor employed in the iron and steel industry increased but 0.4 per cent in May as compared with the same month last year, while wages paid to employes increased 33.2 per cent, according to a report of the bureau of statistics department of labor. The number employed in 112 establishments was 174,883 in May, and 174,251 in the same month last year. The wages paid in May amounted to $13,399,616 as compared with $10,056,436.

In comparison with employment in April, 1920, the employment in May showed a decrease of 6.6 per cent, while wages showed a decrease of 4.2 per cent. Seven of the 14 industries reporting showed an increase and seven a decrease in the total amount of the payroll in May, 1920 compared with April, an increase of 19.2 per cent is shown in car building and repairing, while a decrease of 4.4 per cent is shown in coal mining.

Pere Marquette Road To Buy New Equipment

Detroit, June 28.—F. H. Alfred, president of the Pere Marquette Railway Co., has authorized immediate expenditure of $4,602,000 for improvements, including $1,750,000 for 90-pound steel rails; $750,000 for an engine terminal at Saginaw, Mich.; $732,000 for 12 Pacific type locomotives; $600,000 for a new division yard at New Buffalo, Mich., and $300,000 for an engine terminal at Plymouth. The Detroit, Toledo & Indiana railroad is spending $1,000,000 for new rolling stock and rails. The company also has added 15 locomotives to its equipment as well as 4000 tons of 100-pound rails.

The Briscoe Motor Corp., of Jackson, Mich., plans to produce 25,000 cars in the current year, double the output in 1919. The plant now has an appraised value of $2,457,908, after depreciation allowance.

Lansing, Mich., is coming forward as one of the most important drop forge centers in the Middle West. With the completion of the large plant for the Federal Drop Forge Co. the city will have four such plants. The other plants are the Atlas, Lansing and Melling companies with combined normal manufacturing tonnage of 15,000 tons a month.

Trade Commission Suits Held Up

Government Body Agrees Not To Press Action Until Injunction Granted Steel Producers Is Acted Upon—Contempt Proceedings Brought Against Commission by Bethlehem and Republic Companies Wins Delay

WASHINGTON, June 29.—Prosecution of the federal trade commission's mandamus actions against the Bethlehem Steel and Republic Iron & Steel Co.s has been delayed from two to four weeks, at least, by the announcement of the commission and the department of justice that they will not press the applications for the writs until the injunction obtained by 22 iron, steel and coke producers here has been modified or dissolved. This announcement came in the supreme court of the District of Columbia June 26 when the commission was successful in clearing itself of the charge of contempt lodged by the Bethlehem and Republic companies. It also has developed that not only the 22 companies participating in the injunction suit but also that all iron, steel and coke producers are free from the danger of prosecution, for the time being, for failure to submit the production cost data demanded by the commission. The understanding at the close of the hearing was this:

It was left optional with counsel for the Bethlehem or Republic companies whether they should make at Trenton and Philadelphia returns on the commission's applications for writs of mandamus. Nothing further will be done by either the trade commission or the department of justice until the commission has applied for a modification or dissolution of the injunction granted June 12 in the district supreme court, and obtains it. Meanwhile, the 22 companies, including Bethlehem and Republic companies, which obtained the June 12 injunction may move to have the court's order broadened so as to include the department of justice. Before doing this, the producers must give the commission 10 days' notice. The trade commission must do likewise before it can ask to have the injunction modified or dissolved.

Attorney General's Statement

The promise to delay prosecution of the suits to force iron, steel and coke producers to divulge private cost figures, as stated by Nelson B. Gaskill, a member of the trade commission, is:

"These respondents (the commission) are advised and informed by the attorney general of the United States that he does not intend or propose to take any further steps or to move further in and about the prosecution of said suits against the Bethlehem Steel Co. and the Republic Iron & Steel Co., unless and until the preliminary injunction heretofore issued in this matter be interpreted, reformed or dissolved, so as to permit the continuance of said suits, or one of them, and it is the intention of these respondents to apply to this honorable court for the interpretation or modification of the said restraining order and temporary injunction * * * before taking any further steps in either of said suits. * * * These respondents (again the commission) disclaim any intention to institute, or request the institution of any other suits or proceedings of like character against any of the complainants to the bill of complaint filed in this cause, or against any other operators engaged in the steel industry * * *."

The request of Bethlehem and Republic companies that the trade commission be adjudged in contempt of court followed the routine serving early last week of papers in connection with the mandamus actions filed June 5 at Trenton and Philadelphia. As this serving of papers was subsequent to the agreement of June 21 whereby the temporary restraining order was continued indefinitely, the Bethlehem and Republic companies immediately went into court. The announcement of delay in prosecuting the suits met the objects sought by the steel companies and they did not press their case, which Justice Bailey discharged. The victory at Saturday's hearing rested with the producers, as they forced a preliminary, voluntary interpretation of the injunction by the trade commission, and this interpretation favored the producers.

The next move is expected to be made by the producers, at the suggestion of Justice Bailey, that the department of justice be included within the scope of the injunction—the department having brought the mandamus actions at the request of the trade commission. Ten days' notice of this is required under the June 21 agreement. The commission in turn must give 10 days' notice before seeking to modify or interpret the injunction. It is understood that further action by the government will await the return of Attorney General Palmer and Judge Charles B. Ames, his special assistant, from the Democratic convention at San Francisco. The earliest possible hearing on modifying the injunction will be 20 days distant, it appears at this time. The report from the department of justice is that officials left behind by Palmer and Ames do not feel free to proceed without the consent of either Palmer or Ames.

Where Authority Lies

In demanding monthly production cost reports from the iron, steel and coke producers the federal trade commission has been acting both under the authority of the trade commission act, which is dated Sept. 26, 1914, and the deficiency appropriation act of Nov. 4, 1919. A section of the deficiency act headed "federal trade commission" states:

"For all expenses necessary in connection with the collection of information as may be directed by the President of the United States, or within the scope of its powers, regarding the production, ownership, manufacture, storage and distribution of foodstuffs, or other necessaries, and the products or by-products arising therefrom or in connection with the preparation and manufacture thereof, together with figures of cost and wholesale and retail prices, $150,000."

The clause, "or other necessaries," the commission has interpreted to mean iron and steel, coal, coke, oil, lumber and other commodities. Congress having appropriated $150,000 for this investigation, the presumption is that the cost data so obtained will be submitted to congress when it convenes, Dec. 6. In the meantime the commission may do with the iron and steel industry what it did several times with the coal industry—issue public statements purporting to give a summary of costs and selling prices. Further authority is found by the commission in the act creating it, in which the commission is given power:

"To require, by general or special orders, corporations engaged in commerce, excepting banks, and common carriers subject to the act to regulate commerce, or any class of them, or any of them, respectively, to file with the commission in such form as the commission may prescribe annual or special, or both annual and special, reports or answers in writing to specific questions, furnishing to the commission such information as it may require as to the organization, business, conduct, practices, management, and relation to other corporations,

partnerships, and individuals of the respective corporations giving such reports or answers in writing. Such reports and answers shall be made under oath, or otherwise, as the commission may prescribe, and shall be filed with the commission within such reasonable period, as the commission may prescribe, unless additional time be granted in any case by the commission."

Late in December the commission decided to act in the case of iron, steel and coke production cost reports, with the result that on Jan. 19, 1920, the commission sent a letter to producers requesting this data.

In response to this letter, 61 per cent of the iron and steel companies and 67 per cent of the coke companies submitted cost statements for January, 1920. In enumerating the companies the United States Steel Corp., is split into eight subsidiaries.

To date the commission has made no effort to collect the $100 a day penalty provided for noncompliance with its orders. It claims that it wants figures and not fines.

Return in Mandamus Suit Deferred to June 12

Trenton, N. J., June 28.—The return of the order to the Republic Iron & Steel Co., by the federal district court here, to show cause why it should not obey the request of the federal trade commission by reporting costs and such other information as is desired, which originally was made returnable today, has been extended to July 12. The United States district attorney here produced before the federal district court a letter from the department of justice at Washington, requesting, in view of the similar cases now pending at Philadelphia and Washington, the postponement of the return of the order. It is expected that attorneys of the Republic Iron & Steel Co., the Bethlehem Steel Co. and the other defendants in the federal trade commission's action, will be permitted, through agreement with the department of justice, to consolidate their cases in one litigation. While it is possible that these proceedings may be conducted in the Trenton or Philadelphia district courts, it is considered probable it will be conducted in Washington.

Less Than Half of Coal Operators Report

Washington, June 29.—Bituminous coal mine operators who reported their production costs for March to the federal trade commission averaged a margin of 41 cents a ton for interest, selling expenses, taxes and profits. Their average sales price per ton, at the mine, was $2.74 and their average cost per ton at the mine was about $2.33.

In February, according to the commission, the operators received an average of $2.72 for coal that cost them $2.43 at the mine. In 1918 the average sales receipt on bituminous coal was $2.65 and the production cost $2.04. In the Illinois, Indiana, Ohio and southwestern Pennsylvania coal fields in March the operators received an average of $2.46 for their coal. They paid an average of $1.56 a ton for labor, 26 cents for supplies and 28 cents for general expense, giving them a margin of 36 cents a ton.

This analysis by the trade commission is the result of its study of production cost figures submitted by the coal industry, the like of which the commission now is seeking to exact from the iron, steel and coke industries. It is significant to note that in March the commission was able to use the reports from only 1081 operators, while in 1918 a total of 2482 operators were reported.

May Authorize Rail Loan This Week

WASHINGTON, June 29.—Definite announcement of the allocation of the $300,000,000 revolving fund of the Cummins-Esch act, the step just preceding the letting of orders for some $500,000,000 worth of railroad equipment, is to be made late this week by the interstate commerce commission if present plans carry. Following announcement by the commission that it would advance immediately to the railroads $125,000,000 for new cars and locomotives, $73,000,000 for additions and betterments, $50,000,000 for maturities and $12,000,000 for the short lines, committees representing the trunk lines and the short lines were formed.

The trunk line committee has been in session at New York and the short line committee in Washington. Their reports are about to be laid before the commerce commission, and an immediate decision is promised. To date, nearly all of the larger carriers have made individual applications for participation in loans from the revolving fund, but no noteworthy advances have yet been made, it is claimed. The Boston & Maine has received a loan for maturities, while two small roads in the West and in Texas have been aided in emergencies. Beyond these three instances the commission has not acted.

At least two proposals for the formation of a national equipment trust, the formation of which has been urged by the commission, are being framed. S. Davies Warfield, of Baltimore, chairman of the Seaboard Air Line, is reported behind one plan. Inasmuch as the commission has announced that the railroads must advance for themselves, in some cases, as much as the commission itself will loan for new equipment, it is believed about $500,000,000 will be available for locomotives.

Meanwhile, the carriers are being left largely to themselves to work their way out of their present difficulties. It is recognized that some months must elapse before a noticeable number of new cars and locomotives can be added, hence the concentration of efforts to make the present equipment go as far as possible. Since the call for help, the commerce commission has issued seven orders, including the ones re-established, the Great Lakes coal pool, rerouting freight the shortest way, giving coal the right-of-way east of the Mississippi, and in effect embargoing export coal. These orders, with a tender of the loan for new equipment, constitute the sum of the commission's aid in trying to relieve the present congestion.

The more recent orders of the commission on car service include the cancellation, July 1, of all embargoes issued by regional directors. Because of confusion in laying down the embargoes and failure to specify their end, the commission has decided to cancel every embargo on July 1, and then reissue such embargoes as may be found necessary. Another order prevents the use of flat cars for handling passenger automobiles or freight that can be shipped in other types of cars. This is to expedite the movement of threshing machines, tractors and other farm machinery needed to handle this year's crops. Flat cars may be used for loading automobiles boxed for export, when shipping permits are authorized.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

ASSETS of the Standard Steel Castings Co., Cleveland and Chicago, have been acquired and its liabilities assumed by the Interstate Foundry Co., 3161 East Sixty-first street, Cleveland. This will permit of the expansion and development of the Standard company's business and the consolidation has been ratified by the stockholders of both corporations. The Interstate company now is engaged in settling accounts of the Standard organization and manufacturers presenting bills are asked to specify whether the material was sent to the steel foundry in Cleveland or to the wheel plant in Chicago. F. B. Whitlock as vice president and general manager, of the Interstate company, has this matter in hand. He also is president of the Standard company but a meeting will be held shortly at which some changes in the executive staff probably will be made. Until then officers of both companies will remain and plants will be operated as heretofore.

* * *

AN ADJUSTABLE ratchet wrench will be manufactured by the Anderson Adjustable Ratchet Wrench Co., Elston avenue, Chicago, just organized.

* * *

LAND has been acquired by the A. F. Way Co., Hartford, Conn., at Burnside, Conn., where it is staking out a site for a large machine shop and plant. The building will be 60 x 129 feet, of concrete frame steel construction, and one story high.

* * *

THE Boiler Equipment Service Co., Atlanta, Ga., has been formed to take over the boiler room equipment selling end of the Brooks-Fisher Co., Candler building, that city, as well as all manufacturers' agents accounts, controlled by the latter organization. The Brooks-Fisher Co., in the future will be a contracting firm of mechanical engineers exclusively. No erection of buildings or change of personnel are contemplated.

* * *

JONES OF BINGHAMTON, INC., Binghamton, N. Y., manufacturer of scales and weighing machines, recently was combined with the Osgood Scale Division, scale manufacturer and the Emco Mfg. Co., Binghamton, N. Y., automobile accessories.

* * *

WITHIN a few months, the Champion Spring Co., Cleveland, which is the new corporate style of the reorganized Champion Bed Spring Co., hopes to be established in its new plant in Park avenue S. E. At present it is located at 3717 Iron court. C. F. Lemke is president.

* * *

OPERATING under the name of McCuen & Graves, a firm has been organized for the manufacture of tools and special machinery by Charles L. McCuen and W. Lee Graves. Office and factory have been established at 4100 Ravenswood avenue, Chicago.

* * *

TO PROVIDE additional working capital, the Western Foundry & Mfg. Co., Springfield, O., recently increased its capital stock from $10,000 to $30,000. At present, no plant enlargements or equipment purchases are contemplated. Clarence O. Lutz is secretary.

* * *

THE factory equipment and all other property of the Trego Motor Corp., of New Haven, Conn., have been purchased by the Symington-Hoffman Co., of Baltimore and New York, which a few months ago purchased the factory and assets of the Rochester Motors Corp.

* * *

THE General Motors Corp. has purchased the Doylestown Agricultural Works, Doylestown, Pa. It expects to erect there within two years a large plant for the manufacture of automobiles and farm machinery. The General Motors Corp. will continue the manufacture of farm machinery for export at the present plant.

* * *

PLANS now are being drawn for a new addition to the plant of the Cincinnati Tool Co., Norwood, Cincinnati, which will practically double its floor space. This will mean the purchase of equipment in addition to that which has been ordered within the past several months. J. A. Gardner is sales manager.

* * *

DATA, catalogs and information regarding modern foundry equipment are designed by the Owego Foundry & Machine Co., Owego, Tioga county, N. Y. It plans to build a frame addition, 36 x 78 feet, so that it can be extended readily to 78 x 108 feet, when necessary. Pierre Duvinage, inventor of spiral stairs, is the proprietor.

* * *

ORGANIZED to build special machinery and to develop inventions the Dan Tool Co., 3925 Montrose avenue, Chicago, has just completed its new plant and equipped it for these purposes and for the manufacture of tools, dies, gages and fixtures. J. V. Rasmussen is president and treasurer and Elmer E. Challenger is secretary.

* * *

THE Midstates Engineering Co., Westminster building, Chicago, recently was incorporated as a consulting engineer, to specialize in industrial, power and plant engineering. The equipment and commercial division activity will be directed by J. H. Milliken, experienced as an industrial sales manager. The engineering work will be in charge of R. J. Gaudy, president, formerly connected with the Sessions Engineering Co.

* * *

THE Consolidated Utilities Corp., Binghamton, N. Y., recently was formed to bring about the merger of the iron, brass, aluminum and Osgood Scale divisions of Jones of Binghamton, Inc., Binghamton, N. Y., together with the Emco Mfg. Co., that city, automobile accessories and the Woodworth Mfg. Co., Niagara Falls, N. Y., automobile accessories. By placing the activities of these different companies under one administration, sales of the various products are to be increased and greater purchasing power and economy are gained, since overhead expense and selling costs are diminished and a substantial saving is made in both production and distribution.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

WITH headquarters at 204 Medford building, Akron, O., the National Furnace & Stove Co. recently was formed to build a factory in Ravenna, O., with a capital of $350,000. It contemplates a 2-story structure of brick and steel to consist of a tin shop and foundry. The foundry will be 82 x 121 feet, with a capacity of 50 complete furnace castings daily. The tin shop and office building will be 82 x 100 feet and the entire building will cover an area of about 20,000 square feet. A 30-car garage for the use of employes also will be built. The 6-acre site is located at the corner of Oakwood avenue and Cleveland road, Ravenna. Because of the scarcity of homes, the company plans to erect houses which will be sold to its employes on the easy payment plan.

Officers of the company are: George Heinicke, president and general manager; C. C. Earnest, vice president; H. H. Montis, secretary-treasurer, V. W. Jaeger; general sales manager, and R. W. Mizner, general superintendent. Donald C. Smith, 4500 Euclid avenue, Cleveland, is the engineer and will have plans and specifications complete early in July. The company expects to commence to build by Sept. 1.

* * *

DUE to increased business and in anticipation of building a new plant, the Dragon Mfg. Co., Inc., Marietta, O., valve and pump cups, has recently increased its capital stock from $10,000 to $100,000. From present indications, however, the company advises that the only item for which it will enter the equipment market is some dies, since it will not be necessary for it to purchase foundry or boiler shop machinery.

* * *

FORMED to take over the business recently carried on as a partnership by the Springfield Aluminum Plate & Castings Co., Springfield, O., a company with the same name has been incorporated. While the product heretofore has been confined to a large extent to the making of vibrator pattern plates and aluminum pattern castings, the new organization contemplates the production of larger work. On July 1, the company moved into new and larger quarters at Zigler and Pleasant streets. P. A. Parker is president and general manager; W. J. Jordan, secretary and treasurer; I. K. Hook, vice president and these with H. S. Simondinger and W. Ream, form the board of directors.

* * *

CHARLES A. SNIDER, of Atlanta, Ga., is the inventor of a double acting metal planer that, it is said, will reduce the time and work required in planing metal 50 per cent. The machine is said to be especially adapted to planing railroad shoes, wedges and driving boxes, but may be adjusted to any form of metals. Mr. Snider, who has patented more than 50 inventions, plans the formation of a company in Atlanta to manufacture the planer.

* * *

INCREASING its capital stock from $100,000 to $300,000, the American Metal Products Co., Milwaukee, has purchased a 6½-acre site on Burnham street. It will erect a modern foundry, 80 x 220 feet, immediately and later a rolling mill for the rolling of rods, strips, sheets, etc. This company manufactures a metal which is an aluminum bronze alloy made in various grades to meet engineering requirements. Established four years ago, the company has enjoyed a rapid growth.

* * *

STEEL products other than rope and cable will be manufactured by the Britannia Wire Rope Works at its new plant at Vancouver, B. C., if expansion plans are carried out, reports to the department of commerce show. The new plant, which is on Granville island, Vancouver, is 100 x 200 feet. A duty of 25 per cent on imports of wire rope from the United States is expected to protect it. Heretofore western Canada has imported from the United States all its wire rope requirements.

* * *

THE Westport Brass Foundry, Inc., Westport, Conn., recently was formed with a capital of $25,000, $10,000 of which has been paid in. The company is building a small plant in order to get into production immediately, hence equipment requirements are small, but plans a larger building in the future. The plant is located on the Boston post road, Westport. W. A. Seide, Westport, is president; K. Klein, 1862 Second avenue, New York, is treasurer, and C. Craig, 179 Wilson street, Bridgeport, Conn., is secretary and manager.

* * *

A RECENT increase in capitalization of the Cleveland Co-Operative Stove Co., Cleveland, is to cover the cost of new buildings and equipment at plants Nos. 1 and 2. Since the improvements are practically completed, no new equipment will be purchased. This company also has about completed large additions to the foundry at plant No. 2 which gives it a foundry 135 x 1000 feet, modernly equipped. Assembling and japanning departments, pattern and carpenter shops, etc., likewise have been completed at that plant.

* * *

CONSIDERABLE new equipment, including a number of automatic screw machines, etc., is being purchased by the Imperial Metal Products Co., 230 Ionia avenue N. W., Grand Rapids, Mich., which was organized recently to succeed the Imperial Machinery Co. The new company is organized with a capital of $100,000, of which $54,000 is paid in. Officers are as follows: President, E. J. Vogt; secretary, treasurer and manager, A. L. H. Verwys; vice president, T. Earle Porter. The company's purpose is to manufacture screw machine products on a large scale and it now is building a factory which will be ready about Aug. 1.

* * *

TO PRODUCE all kinds of heat treating equipment, the Advance Furnace & Engineering Co., Springfield, Mass., has been capitalized for $200,000. The organization consists of President William F. Scully, who for many years was connected with the Gilbert & Barker Mfg. Co., the last five years as manager of its furnace department; vice president, W. N. Beuchner, formerly Pittsburgh representative of the Gilbert & Barker company; secretary and treasurer, J. H. Keegan, formerly assistant manager of sales and engineering for the Gilbert & Barker organization; assistant secretary and treasurer, J. Frank Scully, who until recently was connected with the income tax division of the treasury department. H. A. Kunitz is chief engineer.

Refractory Makers

In Convention at Asbury Park Take Steps To Establish Open Shop

Decided steps to preserve the open shop in the refractories industry were taken at a meeting of the Refractories Manufacturers' association held in Asbury Park, N. J., June 25. This was necessitated by the active move now being made by the United Brick and Clay Workers of America to organize the whole brick and clay-working industry. That the accomplishment of this object would mean the closed shop was indicated by an agreement this union now has with a pipe and tile company. This agreement was read by R. P. M. Davis, president of the Mt. Union Refractories Co., Uniontown, Pa., and set forth that the tile company must collect the dues from all union men and an equal amount from the nonunion workmen employed by the company. This money must then be turned over to the union. The company also agrees to give preference to union members when hiring new hands.

The point was indicated in the meeting that the refractories industry is in a rather similar position to the one in which the steel trade found itself last year before the steel strike. A portion of Judge Gary's speech on the open shop was read by M. J. Hickey, of the National Manufacturers' association who addressed the meeting on the question of the open shop. The predominance of the open shop in the industry and as an American institution, Mr. Hickey said, is indicated by government statistics. These statistics were reported to state that at the beginning of the recent war, more than 90 per cent of all the manufacturing establishments capable of producing munitions were being run on an open shop basis. When the United States actually entered the war, in 1917, a further census showed only 3½ per cent of the 527 yards in this country capable of building ships and supplying marine equipment were closed shops; only 4 per cent of the 310 plants capable of manufacturing electrical equipment were completely unionized; of the 18,654 plants capable of manufacturing munitions, a little less than 11 per cent were union or closed shop plants; and of 1950 establishments capable of producing explosives, airplanes, etc., only 3¼ per cent were unionized.

The question of the open shop, allowing every man an opportunity to work where he saw fit without the domination of any union was said to be one of the principles and the members of the Refractories association were urged to act on their convictions. They were assured that nothing could be lost by upholding a principle with right behind it.

A resolution was presented to the meeting by R. P. M. Davis, chairman of the open shop committee, and after a brief discussion this was unanimously passed. The resolution says: "It is the belief of the members of the Refractories Manufacturers' association that the open shop be maintained in all of the plants operated by the members. And be it further resolved that to preserve the open shop principle in the refractories industry, the Refractories Manufacturers' association now in session, hereby recommends to the members of the association: First, that mutual contracts be entered into between the members and other manufacturers of refractories guaranteeing their adherence to the open shop principle and, second, that an open shop association be organized among clay working manufacturers generally and the members of the association be urged to join and support such association when it is organized.

The committee on open shop was delegated the duty of devising means for carrying out this resolution.

Obituaries

KENNETH W. BLACKWELL, vice president of the Canadian Steel Foundries, Ltd., who died June 11, at his home in Montreal, Que., after a brief illness, was born in England in 1850. He arrived in Canada as a boy with his father, Thomas E. Blackwell, who was the first general manager of the Grand Trunk railway. Kenneth Blackwell was apprenticed as a mechanical engineer in that road's shops, Point St. Charles, Montreal, later being appointed mechanical superintendent for its division between Montreal and Toronto, with headquarters at Belleville. He later became mechanical superintendent of the Chicago & Grand Trunk railway and then became connected with the Canadian Pacific in a similar capacity. In 1882 he commenced to manufacture railway car springs, etc., as K. W. Blackwell and the business later became a joint stock company with Mr. Blackwell as president. This company later became the Montreal Steel Works, Ltd., with him as president and managing director. It was absorbed by the Canadian Car & Foundry Co., under the name of the Canadian Steel Foundries, Ltd., Mr. Blackwell becoming vice president, the position held by him at the time of his death. He was director of several large industrial companies and was also a past president of the Canadian Society of Civil Engineers.

George Smith, for many years part owner of the Penobscot Foundry & Machine Co., Bangor, Me., died at his home in that city, June 20, aged 62 years.

Albert E. Jenkins, who for many years was connected with the technical staff of the Grasselli Chemical Co., Cleveland, died of heart disease, June 22.

Antonio Malluk, said to be the owner of the largest platinum mine in Columbia, died June 18, in Cartagena. This announcement has just been made at the New York office of the United States & South American Corp., 120 Broadway, of which company his brother, A. M. Malluk, is president.

Robert G. Dow, aged 76, founder of the Dow Wire & Iron Works, Louisville, Ky., died in Randolph, N. Y., on June 14, according to word received at the plant a few days ago. Mr. Dow retired from active connection with the company some years ago, and in 1909 established the Dow free library in Randolph.

Lewis Albert Butterfield, for 12 years superintendent of the Belcher & Taylor Agricultural Tool Co., Chicopee Falls, Mass., now a branch of the Bateman & Co., Inc., a Delaware corporation, with headquarters in New York, died in a hospital in Springfield, Mass., June 20, aged 58 years. He had been connected with the company 20 years.

Philip Sidney Post, vice president of the International Harvester Co., Chicago, died at his home in Winnetka, Ill., on June 27, after a brief illness. Judge Post had been connected with the company since 1908. He was appointed general attorney in 1910 and nine years later was elected vice president. He took a prominent part in framing the company's industrial relations plan in 1919. He was born in Vienna in 1869, while his father was serving as American consul general to that city.

Wage Promise Averts Rail Tieup

Situation, However, Remains Unchanged with Federal Banks Still Seeking To Reduce Inflation — July 1 Call for Money Causes Reserve Ratio To Drop—Embargoes Placed in East Retard Business

PROMISE of the railroad labor board to announce its wage awards before July 20, embargoes in the east as a result of fresh outbreaks of the switchmen's strike against the delay in determining the wage question and decline in the ratio of total reserves to combined net deposits and note liabilities of the federal reserve banking system were outstanding features of last week's financial situation.

Discontent of railroad employes forced President Wilson to urge the labor board to a speedy decision. Threatened ticup of all the transportation lines in the country crystalized action on the part of the board and its promise was forthcoming. This decision again restrained a nation-wide walkout but other than that it has not changed the situation which has prevailed now for nearly three months. In fact more men went out on strike during the week because of the board's silence and today resulting embargoes at eastern points have even further retarded business.

Business today is held in restraint, so far as transportation is concerned, because of the shortage of men, due to the strike, and the shortage of cars, partly as a result of the strike and largely because of the scanty supply of rolling stock. Efforts of the government are being concentrated on expediting movements of fuel and other essentials much to the detriment of the iron and steel industry. Any wage award by the labor board likely will result in more men returning to the railroads and it is generally expected the award will grant liberal advances. This will tend to speed the movement of cars.

Failure of the board to let it be known that a decision may be looked for July 20, until forced to do so by the intercession of the President, was disquieting. Railroad labor threatened a country wide strike last Monday but the wage promise headed this off. In the meanwhile, however, "outlaw" switchmen persuaded others to quit. This particularly was the case in the east. Freight embargoes placed immediately have had the effect of backing up steel shipments and although the mills and furnaces were operating better than in some time past, unless the situation improves it is possible steel production again will be at a minimum.

While the transportation problem is perhaps the most disconcerting to business generally, the banks probably will be even less inclined to extend credits in the future than they have been even under recent tightened circumstances. Last week reserves fell $10,000,000 due to heavy borrowing by banks to meet the seasonable call for July 1 payments. This urgency, while regarded as temporary, produces a greater strain upon liquid funds with the result that credit accommodations even of a normal character may be more difficult to obtain. For weeks, now, the federal banks have been trying to reduce inflation, and some progress has been made. In the last week the ratio dropped to 43.6 per cent as compared with 44.5 per cent in the week before.

Generally speaking, however, deflation continues without any serious disturbance to legitimate business. Speculation is on the wane, according to indications. Continued price reductions by merchants is in evidence, aimed at reducing stocks to an absolute minimum. Textile mills and shoe manufacturers are receiving cancellations which are causing them some worry. Prices on foodstuffs remain high and likely will continue. Crop reports are favorable, the American Steel & Wire Co.'s estimate last week being that corn, cotton, wheat, forage crops and live stock are improved. Bradstreet's weekly index number, based on the prices per pound of 31 articles used for food, was $4.82 as compared with $4.81 the previous week.

Union of Forging Plants Is Ratified by Holders

Stockholders of J. H. Williams & Co., Brooklyn and Buffalo, manufacturers of drop forgings and drop forged tools, and of the Whitman & Barnes Mfg. Co., Akron, O., Chicago and St. Catharines, Ont., manufacturer of twist drills, reamers, wrenches and drop forgings, have ratified the agreement which provides for the consolidation of the wrench and drop forging plants and business of the latter company at Chicago and St. Catharines, with J. H. Williams & Co., as outlined in THE IRON TRADE REVIEW of April 1. The Whitman & Barnes Co. retains its twist drill and reamer business at Akron, O., and will continue as an entirely separate organization but on an extended scale.

Officers of the reorganized company follow: President and managing director, J. Harvey Williams; A. D. Armitage, vice president; W. A. Watson, secretary and treasurer; R. S. Baldwin, controller; F. W. Trabold, general sales manager; A. S. Maxwell, W. E. Rowell, J. C. Cotter and A. M. Thompson, eastern, western, Buffalo and Detroit district sales managers, respectively; Hugh Aikman, publicity manager; Capt. W. N. McMunn, general works manager; Willard Doud, chief engineer; R. J. Smith, T. F. Du Puy and Barney Nelson, Brooklyn, Buffalo and Chicago division superintendents, respectively; J. C. Scanlon, general purchasing agent; J. B. Payne, general traffic manager, and W. J. Elliott, Canadian manager.

1919 Commerce in Metals and Machinery Shown

Washington, June 29.—A statement just prepared by the department of commerce on United States imports and exports for the calendar year 1919 gives the following imports:

Copper, 86,217,684 pounds, valued at $16,217,684; iron ore, 476,461 gross tons valued at $2,385,689; lead, 19,573,856 pounds valued at $803,990; zinc ore, 34,018,502 pounds valued at $529,660; manganese ore, 333,344 gross tons valued at $11,229,184; aluminum, 17,644,004 pounds valued at $5,810,557; iron and steel, including pig iron, scrap, bars, billets and blooms, 302,766 tons valued at $14,039,441; and coal and coke, 991,835 tons valued at $5,613,758.

Exports in 1919 include $95,930 worth of copper ore, $4,308,746 of iron ore, $1,495,659 of aluminum, $96,389,410 of copper and brass, $415,921 of tin, $94,708,007 of pig iron, scrap, bars, billets and blooms, and $20,192,935 of zinc and zinc dust.

Imports of machine tools in 1919 totaled $139,619 while exports amounted to $22,627,477. Imports of textile machinery totaled $1,135,656 and exports $14,986,369. No railroad cars were imported but $60,749,036 worth were exported. Other exports include steam and electric locomotive engines to the value of $31,-

111,706; portable traction engines, $21,122,466; and agriculture machinery, including implements, $41,195,494.

Car & Foundry Earnings Show Decline

The American Car & Foundry Co.'s gross earnings in its fiscal year ending April 30, last, totaled $14,382,265 a decrease of $2,890,907 as compared with the previous year, according to the annual report submitted to stockholders last week. This was after the deduction of federal taxes. Reducing the sum by $3,891,373 for repairs, replacements, renewals, etc., the net earning for the year were $10,401,192 as compared with $11,771,813 a year ago. After reserves of $9,300,000 for preferred and common dividends, the balance for the year was $1,101,192 which, with $31,324,520 accrued surplus in 1919, makes a total of $32,425,712 as net surplus.

The balance sheet of the company showed materials on hand valued at $15,007,108 at the close of the year as compared with $46,276,398 a year ago. Cash on hand 12 months ago amounted to $16,843,587, or $6,809,188 more than this year. Accounts and notes receivable this year totaled only $8,573,807, as against $14,024,529 the years previously. These, with other items, put the assets for the year at $139,549,827, or $38,242,050 under 1919. Earnings of the company for the past year were as follows:

	1920	1919
Gross earnings after taxes..	$14,382,265	$17,273,172
Renewals, replacements, etc.	3,981,373	5,501,359
Net	10,401,192	11,771,813
Preferred dividends	2,100,000	2,100,000
Common dividends	3,600,000	2,400,000
Main. and imp. reserve		3,000,000
Common dividend	3,600,000	2,400,000
Surplus	1,101,192	1,871,813
Former surplus	31,324,520	29,452,707
Surplus total	$32,425,712	$31,324,520

Steel & Tube Earnings Fall Below 1918

The Steel & Tube Co. of America in 1919 earned $3,962,445 as against $7,877,317 in 1918, a falling off of $3,914,872, according to the annual report which showed a sales total of $44,120,605 as compared with $58,058,598 in the year before. Last year's sales cost was $39,222,700, gross operating profits $4,897,905, miscellaneous income $5,797,826, total income $5,797,826, charges and federal taxes $569,443, balance $5,228,383, interest $2,032,154, balance for dividends $3,198,229, preferred dividends $537,639, and surplus $2,658,590.

In addition the report for the year shows the result of operations the first four months of 1920. The figures are: Gross earnings after federal taxes, $3,569,464; interest, $537,984; balance for dividends, $3,031,480; preferred dividened, $405,333, and surplus, $2,623,147. The report also points out that $4,225,536 was set aside in 1919 for depreciation, depletion repairs and maintenance and states that the properties were maintained in good and efficient condition.

Unfilled orders on Jan. 1 totaled 603,000 tons which more than covered the company's production for the first half of the present year.

Buy Malleable Foundry

Purchased by C. F. Drozeski, D. A. Drozeski and F. T. Kennedy of the Saginaw Malleable Iron Co., Saginaw, Mich., the plant, formerly known as the Franklin Park Foundry Co., Franklin Park, Chicago, will be operated as the Central Malleable Castings Co.

This plant consists of a malleable iron foundry, 72 x 432 feet, in which two 12-ton air furnaces are installed and which has a capacity of approximately 450 tons of malleable castings monthly. A gray iron foundry, 72 x 100 feet, with a monthly capacity of about 300 tons, also is included, together with all other necessary departments. The plant will be ready for production about Aug. 1, or as soon as necessary supplies of raw material are obtained.

Charter Wheeling Steel

The Wheeling Steel Corp., which is to be the corporate name of the consolidation of the Wheeling Steel & Iron Co., the LaBelle Iron Works, and the Whitaker-Glessner Co., was chartered in Delaware last week with a capitalization of $100,000,000. Stockholders of the three companies yet are to approve the merger details as worked out by the directors of the respective organizations and the taking out of incorporation papers is but a preliminary step to the final merging.

Joins Canadian Merger

Stockholders of the Nova Scotia Steel & Coal Co. last week ratified their directors' plans for the merging of the company with the British Empire Steel Corp. No objection was made, it is reported. It is stated, however, that the Canada Foundries & Forgings Co., Ltd., and the Port Arthur Shipbuilding Co. will not be taken into the consolidation. No explanation is given of this but the original plans included the two companies. Shareholders of the Dominion Steel Corp., who last week indicated their approval of the merger plans when they failed to re-elect directors opposing the consolidation, are to meet in Sydney, N. S., instead of Montreal on a date yet to be determined to take final action on the merger. It was partly because of their efforts to win this very point that various former directors were not re-elected 10 days ago. The decision to meet in Sydney was reached after advice of legal counsel, despite the fact a court had ruled against the ousted directors in a suit to force the meeting at Sydney.

Financial Crop Ends

DECLARATION of a stock dividend of 16⅔ per cent on the outstanding $37,500,000 common has been made by the directors of the Crucible Steel Co. of America. A 2 per cent quarterly dividend was voted and the statement made that earnings warrant the payment of 8 per cent on the entire amount of common for the year.

* * *

Capital of the Claire Furnace Co., incorporated under Pennsylvania laws, has been increased from $600,000 to $975,000.

* * *

The William H. Haskell Mfg. Co., of Pawtucket, R. I., manufacturer of machinery and appurtenances, has increased its capital stock from $450,000 to $1,000,000.

* * *

Approximately 8000 acres of Morgan township, Greene county, coal land was transferred from G. Patterson of Pittsburgh to the W. J. Rainey interests. The sale price is reported to be $3,000,000.

* * *

Earnings of the United Iron Works, Inc., Springfield, Mo., in the first four months of 1920 were at a rate of $306,000 net per year. This is equivalent to $7.66 a share, par value $50. On May 1 total assets were $5,465,461.

* * *

President Eugene G. Grace of the Bethlehem Steel Corp. in an interview at Baltimore declared $85,000,000 will have been spent at Sparrows Point by the end of 1920. The expansion and improvement include increasing the number of plate mills from 24 to 48.

* * *

The International Harvester Co. has declared a stock dividend of 12½ per cent on the $80,000,000 common, payable probably in September. Arrangements also were made for semiannual stock dividends of 2 per cent, the common dividend was raised from 6 to 7 per cent annually and the quarterly disbursement of 1¾ per cent was voted.

Economics Affect Tool Trading

Restricted Credits, Liquification of Resources, Poor Collections, and Railroad Labor Difficulties Combine To Halt Machine Tool Buying in June—Railroads, However, Bought Heavily—Crane Business Spasmodic

CHARGING economic factors exercised a restrictive influence upon the machinery market during June. Many manufacturers had their expansion projects halted by their inability properly to finance them; others curtailed their equipment purchases in an effort to liquify their resources while another group was unable to secure sufficiently large stocks of raw material and fuel, due to the transportation situation, to keep their machines operating, to say nothing of making additions. A fourth class of machine tool buyers has complained about collections, saying they were unable to realize on accounts due them and until they were, they would not purchase machinery. One of the largest projects affected by the financial situation was one involving the expenditure of about $40,000,000 by the Midvale Steel & Ordnance Co., for improvements for the Cambria Steel Co., Johnstown, Pa. While cancellations could not be called numerous, a tendency was noted in that direction and this was particularly marked in the East. Many users issued "stop" orders asking that delivery be held up, while others who were active in inquiring for equipment late in May and early in June stated that their orders would be held up indefinitely. Transportation difficulties, superinduced by strikes of railroad yardmen and others, delayed alike shipments from manufacturer to dealer and from dealer to user. These conditions of late were somewhat bettered by the consolidation of small shipments into carload lots. Because of the cumulative effect of all these influences, competition became exceedingly keen on offered business and the market changed from a seller's to a buyer's.

Railroad Purchases Largest of the Month

PURCHASES and new inquiries by railroads, which started a few months ago and gained momentum in May, made considerable headway in June. The largest piece of business of the month was the purchase by the Atlantic Coast Line railroad, Wilmington, N. C., of $500,000 worth of shop equipment from the Niles-Bement-Pond Co. The Chicago, Milwaukee & St. Paul put out a list of about a dozen tools, while the Rock Island and the Burlington roads closed on moderate lists as did the Nickel Plate and Hocking Valley. The Norfolk & Western issued a second list of about 10 tools. The Seaboard Air Line railroad, Washington, inquired for about $200,000 worth of miscellaneous equipment, while the New York Central issued a supplementary list in the East for about $80,000 worth. The Long Island railroad closed on 12 miscellaneous machines for Richmond Hill shops, while the Baltimore & Ohio bought heavy duty engine lathes for an eastern shop and the Lehigh Valley and Texas & Pacific purchased punches and shears.

Automotive Industry Takes Many Multiple Spindle Drills

ONE of the largest orders of the month in automotive fields went to Manning, Maxwell & Moore, Inc., Detroit, for $170,000 worth of multiple spindle drilling machines, coming from the Oakland Motor Car Co., Pontiac, Mich. The Jordan Motor Car Co., Cleveland, is said to be in need of about a dozen of that type of machines, while an auto parts company in that city would order about 10 if it could obtain satisfactory deliveries. The Pierce-Arrow Motor Car Co., Buffalo, is said to be in the market for some special machinery for producing axles and connecting rods. The American Motorcycle Co., 35½ North High street, Columbus, O., issued a list of 30 or more items. The Burn-Oil Tractor Co., Warran, Ind., issued a fair sized list.

Miscellaneous Industries Well Represented in Buying

MISCELLANEOUS business came to the front from a diversified line of manufacturers. The General Electric Co., Schenectady, N. Y., issued an inquiry for 30 machines and bought heavily during the month. The Otis Elevator Co. bought $50,000 worth of equipment, withdrawing from the market for the time being. The E. W. Bliss Co., Brooklyn, N. Y., made some purchases as did the Michigan Screw Co., Lansing, Mich., which was reported to be placing about 45 automatics in its plant. The Cleveland Hardware Co., Cleveland, issued a list of 20 drilling machines, while the McMyler-Interstate Co., Bedford, O., asked for several large machine tools. The Amoskeag Mfg. Co., Boston, and R. G. Carle, Woonsocket, R. I., issued fair sized lists, the former calling for several lathes, while the West India Sugar Finance Corp., New York, put out an inquiry for 20 machines.

Export Demand Was of Fair Proportions

ENGLAND, France, Norway, Sweden, Spain and Portugal continued to take machine tools from this country during June. Because of continued adverse exchange conditions, Italy remained out of this market. About $30,000 worth of fabricating equipment went from a New York seller to Japan. A considerable inquiry from abroad was noted for hand power cranes. Perin & Marshall, New York, bought several electric cranes for a tin plate mill in India, while A. C. Rimmer, New York, bought five locomotive cranes for the account of Campiere Navale, Trentio and Monfacome, Trieste. The Cuba Cane Sugar Corp., Havana, Cuba, purchased 10 hoists from the Shepard Electric Crane & Hoist Co.

A Total of Crane Awards Would Be Large

WHILE at times during June the crane market became dull, the aggregate of spasmodic awards would represent a sizable investment. In the Pittsburgh district, crane building was somewhat hindered by a lack of motors. Perhaps the largest contract of the month was awarded by the Baldwin Locomotive Works, Philadelphia; calling for 14 overhead cranes. The Ford Motor Co., Detroit, bought 11 cranes in Milwaukee, while the Griffin Wheel Co. bought eight for Council Bluffs, Iowa, and Kansas City. The Saco-Lowell Co., Lowell, Mass., awarded six cranes and early action was expected by Kennedy-Van Saun Mfg. Co., New York, on four cranes for the Danville Iron & Steel Co., Danville, Pa. The Canadian National railways purchased 10 locomotive cranes in the United States, while the chief of transportation, Washington, is said to require 20 of that type together with several gantry cranes. Crane purchasers and inquirers in Cleveland included Park Drop Forge Co., Louisville Sheet Steel Co., Louisville, O., Canton Sheet Steel Co., Canton, O., and the Chapman-Price Steel Co., Indianapolis.

Machine Tool Sales Are Retarded

Factors Other Than Summer Season and Transportation Delay Restrict Trading—Credit Interference Brings Postponements of Extensions—Fresh Tool and Crane Inquiries at Low Ebb—New Orders Are Few

FINANCIAL factors more than anything else are responsible for the dearth which has become so general in the machine tool markets. Inquiries seem to be at the lowest point reached in many weeks and orders are few and far between. While it is true that the summer season usually finds a dull machinery market, still it is thought that if the many projects which have been promising large machinery purchases for months past could be financed and if various railroad matters including freight rates, wage awards, etc., could be settled, sizable equipment orders would be placed. As it is, machinery salesmen following up announcements regarding expansion plans made during several weeks ago are told that they have been indefinitely postponed.

Small scattered orders are the rule in the east but an exception is the purchase by the General Electric Co., of about 20 woodworking machines for Baltimore. A few miscellaneous machines were purchased by the Foster Engineering Co., Newark, N. J. Canada reports a slightly improving demand, although most of the requests for prices are on small lots of machines. Chicago dealers believe that while day to day business is small, an aggregate for the month would be surprisingly large. Building projects in the latter city are held up due to the shortage of building supplies.

Several projects are up which it is thought will develop some sizable machinery demands. The General Motors Corp., bought a factory in Doylestown, Pa., in which to manufacture farm machinery. The Symington-Hoffman Co., bought a plant in Rochester, in which to make automobile motors, which it is equipping with machinery from another plant which it purchased, but for which additional machine tools will be purchased. The Duesenberg Automobile Motors Co., Inc., has bought a site in Indianapolis.

Dullness in machine tools finds its counterpart in the crane and heavy equipment market. The Ajax Forge Co., Superior, Wis., wants four cranes, while Joseph T. Ryerson & Sons are looking for one. The Kennedy-Van Saun Mfg. Co., New York, closed on one crane, delaying action on two others. Garcia & Diaz, New York, is inquiring for an electric crane for export, while Richard Airey, New York, wants two locomotive cranes for Mexico. Other inquiriers for locomotive cranes include the Sugar Factories Construction Co., the American Car & Foundry Co., and the American Creosoting Co., New York.

Eastern Machinery Market Becomes More Quiet

NEW YORK, June 28.—Only small, scattered orders make up the current business in the eastern machine tool market, trading being the lightest in weeks. At the same time, there has been little new inquiry. The General Electric Co. has brought out a list of about 20 woodworking machines for Baltimore, and the Foster Engineering Co., Newark, N. J., which has just awarded contracts for a $120,000 plant, is in the market for a few miscellaneous machines, but there is nothing especially sizable. The railroad situation, however, continues promising, and sellers of machine tools generally expect this business to go far in tiding them over the dull period which is believed likely to continue for the next few weeks, as far as general equipment buying is concerned.

The General Motors Corp. has purchased the Doylestown Agricultural Works, Doylestown, Pa., which it expects to develop for the manufacture of farm machinery. The Symington-Hoffman Co., of Baltimore and New York, has purchased the plant of the Rochester Motors Co., Rochester, N. Y., for the production of automobile motors, and is equipping a new addition largely with machine tools from the Trego Motors Corp. plant at New Haven, Conn., which it recently bought. Some additional machinery will be required.

Inquiry for cranes continues light, and orders are few. In electric cranes, the order of the Kennedy-Van Saun Mfg. Co., 120 Broadway, New York, is outstanding. It called for a 30-ton 4-motor crane, with 42-foot span, and was placed with the Bedford Foundry & Machine Co., Bedford, Ind. The crane is for installation in the plant of the Danville Iron & Steel Co., Danville, Pa. The original inquiry called for two additional cranes, of five and 10 tons capacity, respectively, but no action will be taken on them at this time. Garcia & Diaz, 59 Pearl street, New York, are inquiring for an electric dock crane for export.

Included in locomotive crane orders are a 30-ton Ohio crane for the Sugar Factories Construction Co., 165 Broadway, New York; a 12½-ton Industrial crane for the American Car & Foundry Co., 30 Church street, New York, and two 15-ton Industrial cranes for Richard Airey, 233 Broadway, New York, for shipment to Mexico; and a 15-ton Browning crane for the American Creosoting Co., 17 Battery Place, New York.

Crane Inquiry Moderate in Chicago

CHICAGO, June 28.—While the unusual way in which business comes to dealers in machine tool equipment gives the impression of slow trading, totals for a month's business usually show a much larger volume than had been expected. Statements for May sales in many in-

Ludlum Consistently Uniform Brands

Mohawk Extra
High Speed Steel

Albany
Alloy Tool Steel

Huron
Alloy Die Steel

Yuma
Chrome Magnet Steel

Pompton
Carbon Tool Steel

Oneida
Oil Hardening Steel

Teton
Ball Bearing Steel

Seminole
"Foolproof" Chisel Steel

Heating Ingots

Below is shown one of our ingot-heating teams. The ingot is carried to the furnace by a large crane, then lowered to a position before the door. Here the men take charge of it and shove it far into the furnace where it is left until in the proper condition for rolling.

Every step in the production of Ludlum High Grade Tool Steels is alertly watched—for we insist on keeping our product up to standard—*"Consistently Uniform"*.

We would like to explain to you *why* the majority of large users and twist drill and milling cutter manufacturers in America are using Ludlum Steels. Ask us.

Ludlum Steel Company

General Office and Works
WATERVLIET, N. Y.

BRANCH OFFICES

Chicago, New York City, Cambridge, Mass., Cincinnati, Cleveland, Detroit, Philadelphia, Buffalo, Pittsburgh

Say you saw it in THE IRON TRADE REVIEW

stances have shown a greater volume than April, both in dollars and in number of machines and this probably will be true of June as compared with May. The feeling of slack business apparently comes from the absence of large inquiry in the past several weeks.

Railroads, since the Burlington and Rock Island issued lists, have been following the plan of buying single tools or a few at a time rather than making up larger lists for entire requirements. This probably is a result of forced curtailment in expenditures. Numerous new plants and additions to existing plants are being put up in Chicago, but the building supply situation delays completion and owners are buying sparingly of equipment for them. Railroad conditions as to shipments of machinery continue unchanged, with a fair volume moving, although some shipments are much delayed.

Inquiry for cranes is moderate, as most makers are unable to promise deliveries under four to seven months. The Ajax Forge Co. is inquiring for four cranes for its new plant at Superior, Wis., including a special cantilever gantry crane of 10 tons capacity, a standard 10-ton and two standard 5-ton cranes. Joseph T. Ryerson & Sons are inquiring for a 15-ton crane for their plant at Jersey City.

The Interstate Brass Mfg. Co., Chicago, will build a new plant. The Steel Fabricating Corp., Chicago, is seeking a site for a third fabricating plant in Indiana for the production of sectional steel buildings. The National Brake & Electric Co., Milwaukee, will build a foundry addition. The Prime Mfg. Co., Milwaukee, is adding to its foundry and machine shop. The Illinois Malleable Iron Co., Chicago, will build a foundry and annealing plant at Louisville, Ky.

Canadian Demand More Active

TORONTO, Ont., June 28.—The demand for machinery and machine tools in the Canadian market was a little more active last week and according to some dealers, inquiries appear to be on the increase. The high prices now prevailing and deferred deliveries continue to hold up sales, but a number of firms are urgently in need of new equipment and are making their requirements known from time to time.

Inquiries now being received come from all points and while most of these are for single tools, one or two lists have recently been received which will help to keep business going for some time. Several new industrial enterprises are starting building operations and their machinery and tool requirements will add further interest to the local markets. Included among the heaviest inquirers for equipment this week is J. M. Leamy of the Manitoba Power Commission, Winnipeg, Man., who will receive bids until July 7, for the erection of a power house at Virden, Man., and is in the market for 3-phase, 2300-volt generators and switching equipment, and two semidiesel engines, direct connected to alternating current generator. Specifications for the above equipment are with the Chief Engineer, New Parliament buildings, Winnipeg, Man. The Elliott & Whitehall Machine & Tool Co., Ltd., Galt, Ont., which is erecting a $40,000 plant, is in the market for milling and slotting and shaping machines, etc. The McKinnon Industries, St. Catharines, Ont., are in the market for a belt-driven trimming press, 36 inches between housings, stroke 4 inches with side cutout, dimensions equal to No. 93 Toledo.

New large building undertakings which are expected to bring forth a decided improvement in the demand for machinery, tools and equipment include a $10,000 factory for the Pioneer Auto & Carriage Works, 912 Richards street, Vancouver, B. C. W. R. Bonnycastle, architect, 1950 Horo street, that city, is preparing plans for the construction of a power house for the Bridge River Power Co., to cost $30,000,000. This undertaking will include the construction of six power units at a cost of $5,000,000 each, and the development of 40,000 horsepower. The Canadian National railways, A. E. Warren, Union Station,

Good Market Seen in Holland for American-built Machinery

European Staff Correspondence

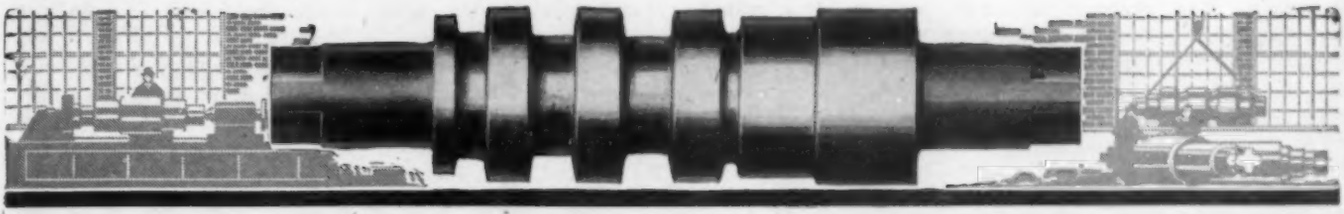
LONDON, June 16.—As previously stated in these columns, the Germans sold a large number of machine tools to Holland during the first few months following the end of the war. In some cases it is stated that individual dealers in the Netherlands have laid in stocks which will cover their requirements for some years. Nevertheless there is a good market in Holland for American-made machine tools. Before the war Holland imported all of her tools from the United States, the United Kingdom and Germany. The British manufacturers furnished only high grade products and the same is true of the shipments from the United States. The German goods were mainly cheap imitations of the American tools. This made it possible before the war for the Germans to sell machine tools on a large scale in the Netherlands, although the better class of the Dutch concerns confined their purchases mainly to the United States.

During the war it was practically impossible to import machine tools of any description into Holland and therefore a few Dutch firms commenced the manufacture of lathes, etc., which are largely imitations of American tools. Sweden is another country from which Holland is now able to obtain machine tools, these tools also are copies of the American made article and are of second-class construction and finish.

At present there is a special demand in the Netherlands for lathes, planers, drill presses and shapers. There is danger of American manufacturers being subjected to severe British competition in this field. For instance, a large dealer in Holland recently wrote the following to a government official in England.

"I have customers all over Holland for lathes, planing and cutting machines, small tools, etc., which I receive regularly from America, but if England were to make offers at competing prices I would prefer dealing with British houses."

Several representatives of machine tool builders in the United States have visited Holland recently and it hardly is necessary to add that the German traveler has covered the field thoroughly. At the present time the Dutch market is loaded with German-made machinery of very poor quality and large quantities of second-hand tools. The prices asked for these tools are extremely low. Many German salesmen are dealing with actual consumers at wholesale prices.



Rolling Mill Jim says, You Tell 'Em!!

Say Jim:

How do you keep up your big production since last July?

You tell 'em HUB,—i'm BARD.

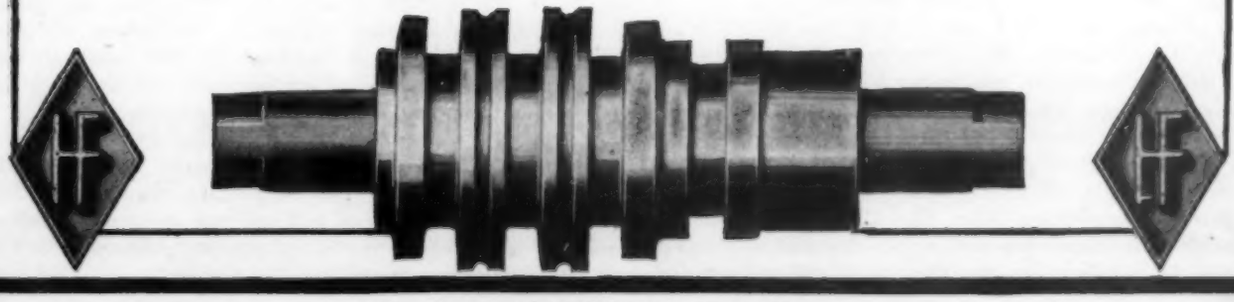
So Long,

Rolling Mill Jim.—

Hubbard Steel Foundry Co.

EAST CHICAGO, IND.

All Kinds of Iron and Steel Rolls and Steel Castings



Winnipeg, Man., general manager, will build a round house and machine shop at Saskatoon, Sask. The Stansell Motors, Ltd., Amherstburg, Ont., will build a factory for the manufacture of automobile bodies, etc. John T. Hepburn, 18 Van Horne street, Toronto, will start work immediately on an addition to the foundry. The Sheet Metal Products Co., 199 River street, Toronto, has let the contract to Brown & Cooper, Ltd., 297 Carlton street, for the erection of a factory to cost $85,000, and construction work will be started at once. The Ford Co., of Canada, 672 Dupont street, Toronto, has secured a site adjoining its present plant and will build a warehouse and assembling plant. The St. Maurice Paper Co., Cap de la Madeleine, Que., has let the general contract to the George D. Fuller Construction Co., 285 Beaver Hall Hill, Montreal, for the erection of a grinding mill to cost $500,000 and a machine shop to cost $30,000. The Berliner Gram-O-Phone Co., St. Antoine street, Montreal, Que., will build a power house there.

Cleveland Sellers Having Quiet Time

CLEVELAND, June 29.—Contraction of machine tool trading in this market which always is seasonal at this time of the year, is due to several other contributing causes. Chief among which is the check placed upon building and expansion activity by the continued tightness of the money market. Cases are numerous where projects current a few months ago presaging large investments in equipment, now are indefinitely postponed and the manufacturers state they do not know when they will be revived. The transportation situation still hampers the movement of machinery from builder to seller and from seller to user. Prospects of settlement of wage difficulties among trainmen, makes sellers hopeful that railroad buying of machine tools will soon commence in earnest and go far toward tiding them over the slack months of July and August. Some manufacturing establishments still complain about being unable to get adequate stocks of raw materials and fuel and these consequently hesitate about making expenditures for additional equipment. Dealers, however, with many unfilled orders on their books, are not worrying about the lack of spot business.

Inquiries are at a low ebb and orders are few. A good demand exists for supplies and repair parts, however, which are receiving the major share of attention just now, many manufacturers taking advantage of the opportunity to put their equipment in good condition. Most of the current inquiries call for one or two machines, large lists and large purchases being conspicuous by their absence. The Torbensen Axle Co., Cleveland, has decided not to purchase radial drills and has postponed action on the Demco drills and other machines for which it was inquiring. It recently purchased two Foot-Burte drills from a Cleveland seller. The Columbian Chemical Co., Barberton, O., also bought recently in Cleveland and is endeavoring to hasten delivery. The National Bearings Co., North East, Pa., wants a punch press of 70 to 100-ton capacity, while the Garver Mfg. Co., is seeking some bench lathes in the Cleveland market.

Machine shop tools, stamping presses, etc., will be bought between now and early 1921 by the Edward Katzinger Co., Chicago, for a 3-story building in which bakers' and confectioners' equipment will be manufactured. The Globe Electric Co., 368 Broadway, Milwaukee, is in the market for alternating current motors from 1 to 20 horsepower and rotary converters of about 35 to 50 and 75 kilowatt. While the exact nature of the improvement is not stated, the Berger Mfg. Co., Canton, O., will expend $15,000 on improving its plant. Forge shop equipment will be required by the Charles Phillips Tool Co., Mannington, W. Va., which is erecting a new 72 x 86-foot forge shop.

Announcements in the automotive field of interest to equipment sellers include one by the Apperson Bros. Automobile Co., Kokomo, Ind., which is to erect several new buildings at that point. The Duesenberg Automobile Motors Co., Inc., incorporated in Delaware for $5,000,000, which was to have built in Cleveland, now has purchased a site in Indianapolis, where it will erect a large plant. The General Motors Corp., has purchased the Doylestown Agricultural Works, Doylestown, Pa., and will complete its equipment for the manufacture of farm machinery. The Napoleon Motors Co., Traverse City, Mich., has increased its capital from $500,000 to $2,500,000 and it is understood that part of the proceeds will be utilized for equipment. The Springfield Auto Lock Co., Springfield, O., recently formed with $100,000 capital by J. C. Hoeflick and E. L. Buchwalter will probably require some equipment for manufacturing its automobile locks.

The Cincinnati Tool Co., Norwood, Cincinnati, states that it is having plans drawn for a new addition which will double its floor space and that it will be necessary for it to purchase considerable new equipment. The Dragon Mfg. Co., Marietta, O., is to build a new plant, having increased its capital from $10,000 to $100,000 and while some new machinery will be needed, dies chiefly will be purchased.

Other prospective buyers of machinery in or near Cleveland include the Kelley Foundry & Machine Co., Elkins, W. Va., formed with a capital of $25,000. The Steel Fabricating Corp., Hammond, Ind., recently increased its capital from $800,000 to $3,000,000 to build a new plant and probably will purchase fabricating equipment, etc. The Des Moines Foundry & Machine Co., Des Moines, Iowa; the Chatfield Machine & Foundry Co., Escanaba, Mich.; and the Kanawha Mfg. Co., Charleston, W. Va., are among those who will build and equip machine or forge shops. The Sheets Elevator Co., Cleveland, increased its capital from $200,000 to $1,000,000. The Hertner Electric Co., Cleveland, has bought a site on which it will build and equip a plant to manufacture electrical supplies. The Lima Foundry & Machine Co., Lima, O., is to start work soon on a new plant. The Jeavons Spring Co., Cleveland, plans an addition.

Now Take Orders Subject to Strikes

CINCINNATI, June 29.—A new factor has entered into the taking of orders for shipment out of this territory. Manufacturers' representatives now take orders on six or seven months delivery "subject to strikes." In other words deliveries out of Cincinnati are indefinite due to the labor situation, for plants which formerly employed 1500 men and which now are manned with about 300 are unable to make promises. Some manufacturers are making an effort to educate the men to the danger of a long drawn out period of unemployment and have raised before them the possibility of their places being taken by skilled workmen from other parts. It is known that large numbers of machinists, toolmakers and others are ready to come to this country as soon as immigration to America opens up, thus creating a situation similar to one which followed the difficulty in Germany in 1840, when so many came to America, obtained employment and have remained ever since. A fair demand exists for machine tools for export, but transportation difficulties still hamper the movement of the equipment to seaboard. This demand is contributed by England, France, Norway, Sweden and South America. Several railroad and railroad equipment companies recently have been active in the market, purchasing odd lots of lathes, punches, shears, etc.

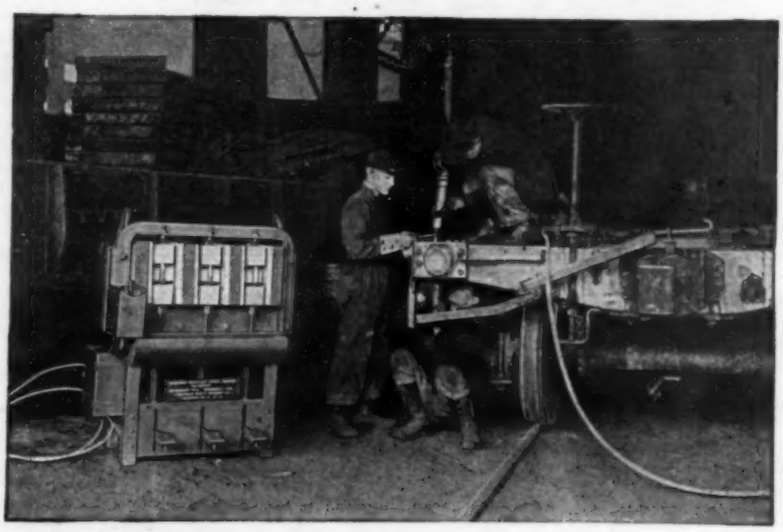
Eliminate that smoke!

—and the intense heat and dirt of fuel-burning rivet heaters

No man can work at his best while breathing smoke and fumes from a coke or fuel-oil furnace. Frequently work is impossible for some time after the furnace is started. In summer the intense heat thrown out is apt to cause prostrations and it surely reduces output.

The Berwick Electric Heater eliminates all these troubles. Can be placed close to the work without discomfort to workmen and damage to newly painted or finished surfaces. No dirt or drippings to be cleaned up.

BERWICK ELECTRIC RIVET HEATER



Saves a Dollar

on Every Hundred Pounds of Rivets Heated

—Reduces burning and scaling to less than ½ of 1%.

—Saves 20 to 70% of cost of heating, as compared with fuel-burners.

—Hot rivets in 20 to 30 seconds. No waiting for atmosphere to clear. Can be placed close to work.

—Power used only when hot rivets are needed. Less than 20 kilowatt-hours per hundred pounds of rivets heated.

—Easy to operate. Perfectly safe.

Send for catalogue. State rivet requirements and alternating current conditions.

American Car and Foundry Company

165 Broadway, NEW YORK

7

Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Among New England Plants

AUGUSTA, ME.—The Portland Foundry Co. has been incorporated with $512,500 capital by D. A. Leland, W. T. Gardiner and C. L. Andrews.

KITTERY, ME.—The Yuba Tractor Co. has been incorporated with a capital of $5,000,00, by Harry W. Foster, George E. Burnham and Elmer J. Burnham.

PORTLAND, ME.—The Portland Foundry Co. recently was organized with a capital of $250,000.

BOSTON.—The Emerson Appliance Co., 251 Causeway street, plans a plant, one story, 20 x 40 feet, to cost $15,000.

BOSTON.—The White Rebuilt Truck Co. has been incorporated with a capital of $50,000, by Frank J. Harris, Julius Levine and William G. Burns.

BOSTON.—Robinson Equipment Co. has been incorporated for $150,000 to manufacture tools, machines, hardware, etc. Frank S. Parsons is president.

BOSTON.—The J. J. Walsh Co. has been incorporated to build vehicle bodies with a capital of $150,000, by Roger A. Deveney, Martin F. Deveney and E. J. Deveney.

BOSTON.—The Commonwealth Sheet Metal Works, Inc., has been incorporated with $11,000 capital by Hugo R. Swanson, Erik M. Schwartz and E. A. F. Kohler.

BOSTON.—The Eureka Metal Heel Co. has been incorporated to make metal heels, with a capital of $30,000, by George Mitchell, Stergos Jamopoulos and A. E. Roberts.

BOSTON.—The Walker Mfg. & Sales Co. recently was incorporated to do welding with a capital of $25,000, by Louis J. Walker, Arthur L. Weston and Robert T. Anthony, Hudson, Mass.

CAMBRIDGE, MASS.—The National Co., Boston, maker of mechanical specialties, has let the contract for a factory to cost $25,000.

CAMBRIDGE, MASS.—Cambridge Metal Barrel Co. has been incorporated for $10,000. Edmund T. Flynn is one of the directors.

FITCHBURG, MASS.—The Vendad Co. has been incorporated to build machines with a capital of $50,000, by Edmund T. Flynn, L. Robinson and F. R. Mullin.

LEOMINSTER, MASS.—The City Hardware Co. has been incorporated with a capital of $15,000, by John H. Crain, John J. Dowd and William A. Doyle.

LOWELL, MASS.—The Laundry Loom Co. has been incorporated to build looms with a capital of $50,000, by A. Desrosiers, A. H. Landry and John B. Landry.

LYNN, MASS.—The Standard Press Steel Co. recently was incorporated with a capital of $25,000, by Oscar H. Nelson, Charles L. Miller and Charles L. Lindley.

MONTAGUE, MASS.—Plans are being made for a plant at Turners Falls, Mass., for the Woods Process Corp., manufacturers of axes.

NATICK, MASS.—The Northway Motors Corp. contemplates a forge shop.

NEW BEDFORD, MASS.—The Morse Twist Drill & Machine Co. contemplates an additional factory.

NORTHAMPTON, MASS.—The International Silver Co. will build a 40 x 100-foot forge shop addition.

QUINCY, MASS.—The Boston Gear Works has let the contract for a manufacturing and machine shop to cost $50,000.

QUINCY, MASS.—The Bethlehem Shipbuilding Corp. has let the contract for a combination shop to cost $150,000, at its Fore River yard.

WORCESTER, MASS.—The Rogers Drop Forging Co. will build an addition.

WORCESTER, MASS.—Work has been started on a 5-story 60 x 140-foot storage building for Crompton & Knowles Loom Works.

WORCESTER, MASS.—The Acme Tool & Stamp Co. has been formed by Andrew P. Werme, George H. Lavene and Louis J. Stone.

WORCESTER, MASS.—The Worcester Chain Works has been formed by W. J. Worton and William H. Homer.

WORCESTER, MASS.—The Worcester Pressed Steel Co. is to build a 2-story steel storage building to cost $25,000.

AUBURN, R. I.—The Universal Winding Co. is having plans prepared for a 3-story, 60 x 130-foot administration building.

ANSONIA, CONN.—The plant of the Seymour Mfg. Co. has been purchased by the Farrel Foundry & Machine Co. of Ansonia.

BRIDGEPORT, CONN.—The American Specialties Co., maker of hardware, has let the contract for a 1-story, 60 x 102-foot factory to cost $40,000.

BRIDGEPORT, CONN.—The Cave Welding & Mfg. Co. has let the contract for a 1-story, 40 x 90-foot addition.

BRIDGEPORT, CONN.—The Berkshire Steel Products Co. has plans for the ereceitno of a 2-story building, 54 x 140 feet, to cost $50,000.

EAST HARTFORD, CONN.—Olds & Whipple have let the contract for a 3-story, 181 x 225-foot plant, to be equipped with an electric crane.

FAIRFIELD, CONN.—The Bridgeport Deoxidized Bronze & Metal Co. will erect a foundry here.

HARTFORD, CONN.—The O. B. Herlith Mfg. Co., Inc., has been incorporated with a capital of $20,000 by Otto B. Herlth, William C. Herlth and Andrew J. Broughel.

HARTFORD, CONN.—The Spafford Machine Screw Works, Inc., has been incorporated with a capital of $330,000, by F. L. Spafford, 516 Asylum street, and others.

MERIDEN, CONN.—Work is nearly completed on the 3-story screw factory being constructed for the Charles Parker Co.

NEW HAVEN, CONN.—The National Cutlery Co. has been incorporated to make cutlery and hardware with $50,000 capital by Patrick Concannon, D. Concannon and Richard Dargan.

NEW LONDON, CONN.—The New London Broaching Machine & Tool Co. has been incorporated with $25,000 capital, by E. L. Streeter Jr., M. E. Inflorati and Lewis Crandall.

PLANTSVILLE, CONN.—A 2-story building containing the finishing and die sinking departments of the Atwater Mfg. Co., drop forgings and hardware, was damaged by fire June 24, with $125,000 loss. It will be rebuilt.

WATERBURY, CONN.—The Waterbury Clock Co., Cherry street, will build a 1-story power house, 50 x 57 feet, to cost $12,000.

North Atlantic States

ALBANY, N. Y.—McKaig-Hatch, Inc., 1590 Niagara street, machine products, has plans for three 1-story buildings, 60 x 150 feet, 50 x 200 feet and 50 x 50 feet.

BROOKLYN, N. Y.—Druignid Bros. have plans for an addition to their machine shop, one story, to cost $25,000.

BROOKLYN, N. Y.—Henry Holder Jr., architect, 242 Franklin avenue, is preparing plans for a foundry, 100 x 250 feet. The name of the owner has been withheld.

BROOKLYN, N. Y.—The Komp Electric & Mfg. Co. has been incorporated with a capital of $10,000, by G. A. Dewey, R. G. Dunbar and F. S. Komp, 2211 Nostrand avenue.

BROOKLYN, N. Y.—Joseph Maresca & Sons have been incorporated to manufacture hardware, with a capital of $25,000, by J. and R. and F. V. Maresca, 1067 Coney Island avenue.

BUFFALO.—The W. Robertson Machine & Foundry Co., 58 Rano street, has completed plans for a 1-story plant addition, 120 x 170 feet, to cost $15,000.

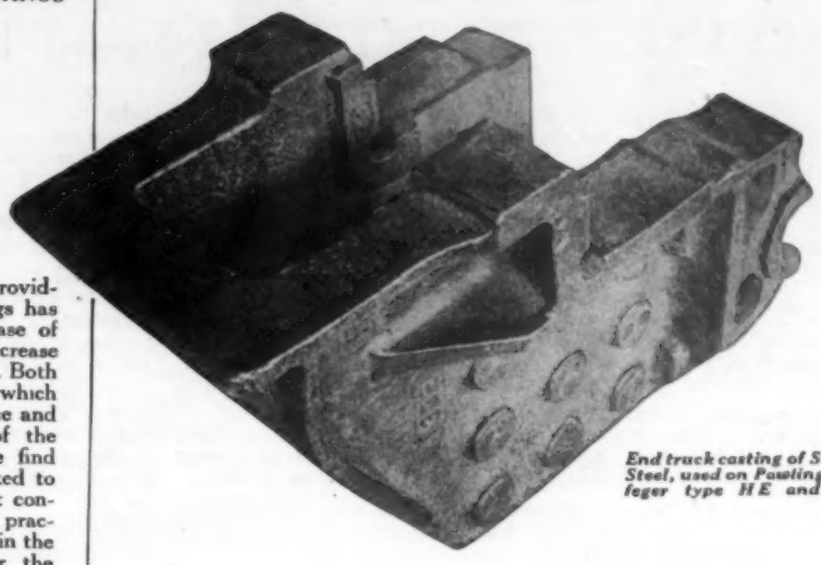
LONG ISLAND CITY, N. Y.—The Hunter Illuminated Car Signs Co., Linden avenue, has plans for an addition to its plant, one story, 40 x 85 feet.

MIDDLETOWN, N. Y.—The Shann Mfg. Co. recently was incorporated with a capital of $20,000 to manufacture metal specialties, by F. Van Amber, F. W. Morgan and G. H. Crawford.

NEW YORK.—The Habirshaw Electric Cable Co., 10 East Forty-third street, plans a 1-story plant addition, 60 x 100 feet, to cost $30,000.

NEW YORK.—Charles E. Egan & Co. has been

SIVYER S CASTINGS



End truck casting of Sivyer Electric Steel, used on Pawling & Harnischfeger type HE and KE cranes

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself. When we find that a casting we are asked to furnish is of a design not consistent with good foundry practice, we study its function in the completed unit and offer the necessary suggestions to make it a really practicable casting job without affecting in any way its function and efficiency.

Secondly: Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

Thirdly: Sivyer Service makes a careful study of the pattern and molding problems involved, for improper gating and insufficient risers are often the greatest wasters of machining labor and metal.

Fourthly: Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unusually and unfailingly good castings of electric steel. It never relies on one factor alone, relies very little even on the natural freedom of electric steel from occluded gases and on its commonly recognized merit in resisting crystallization. It also depends but little on the inherent scientific accuracy of the electric furnace process. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.

HERE is a casting whose duty demands the achievement of four metal qualities—toughness, uncommon strength, ductility, and a resistance to crystallization. Riveted between truck channels, this end truck casting used by the Pawling & Harnischfeger Co. on their traveling cranes works under maximum wheel loads of 10,600 to 30,500 lbs. Castings of Sivyer Electric Steel were chosen because they embodied to the utmost the four principal requirements. More than this, the unvarying flawlessness and easy machining properties of Sivyer Castings bettered the construction of P. & H. cranes, while cutting the costs of machining labor. The distinctive superiorities of Sivyer metal and methods have gained for Sivyer Electric Steel Castings their national market.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

Say you saw it in THE IRON TRADE REVIEW

incorporated with a capital of $10,000 to prepare ships for sailing, by J. A. Walsh, T. Niven and C. E. Egan, 283 Garfield place.

NEW YORK.—The Axle Lock Corp. has been incorporated with a capital of $80,000, by A. and J. Liebmann, W. P. Gahagan, 231 Lincoln place, and others.

NEW YORK.—The Pressed Steel Auto Parts Corp. recently was incorporated with a capital of $150,000, by G. V. Reilly, H. C. Hand and S. B. Howard, 65 Cedar street.

NEW YORK.—The Almozina Mfg. Co. recently was incorporated with a capital of $100,000, by M. Denofrio, E. Tortolani and H. C. Fette, 116 Nassau street.

NEW YORK.—Croston-Carroll, automatic primers and vaporizers, has been incorporated with an active capital of $5000, by F. Kweton, F. C. Bangs and L. C. Lindenberger, 42 West Thirty-fifth street.

NEW YORK.—The Boedicker Photo-Litho Machine Corp. recently was incorporated with a capital of $1,000,000, by H. T. Thomas, T. H. Dimon and J. Loughrey, 507 Fifth avenue.

NEW YORK.—The Brough Terminal Co., shipbuilding and drydock, has been incorporated with a capital of $1,000,000, by C. K. McGuire, W. A. Herrmann and H. Cohen, 230 West Ninety-seventh street.

SALEM, N. Y.—The Humphrey Die & Tool Corp. is reported planning to increase its capital from $6000 to $50,000, and plans plant additions.

SYRACUSE, N. Y.—The Jones Oil Engine Co., Walton street, has plans for a 1-story building, 50 x 100 feet, to cost $10,000.

SYRACUSE, N. Y.—The Milton Mfg. Co. has been incorporated to make buffing and polishing wheels, with a capital of $10,000, by P. E. Goley and M. L. Callahan.

ALLENTOWN, PA.—The Allentown Cable & Machine Co. plans a 1-story plant, 50 x 100 feet, to cost $35,000.

CARBONDALE, PA.—The Hendrick Mfg. Co., Inc., plans a machine shop, two stories, 75 x 150 feet.

ERIE, PA.—The plant of the Patterson-Stirling Sheet Metal Works recently was damaged by fire.

LAWRENCEVILLE, PA.—The plant of the Frank Turner & Son Co. recently was damaged by fire.

MOSCOW, PA.—The Q-S Mirror Fastener Co. recently was incorporated with a capital of $10,000, by I. W. Beslecker, Fred Andrews, Clarence Beslecker and Alfred W. Barnett.

NEW CASTLE, PA.—The Johnson Bronze Co. is reported planning the erection of an addition to its plant to house a foundry and machine shop.

PHILADELPHIA.—The Philadelphia Electric Co. has plans for a power house.

PHILADELPHIA.—The Onley Foundry Co. has awarded a contract for an addition to cost $16,000.

PHILADELPHIA.—Contracts have been awarded by the Taylor Wharton Iron & Steel Co. for a machine shop addition.

PHILADELPHIA.—The Commercial Truck Co. has awarded a contract for a forge shop to cost $15,000.

PHILADELPHIA.—The Hale & Kilburn Corp. is reported planning improvements to its power plant at a cost of $60,000.

PHILADELPHIA.—The Walter Snyder Co., 3431 Market street, manufacturer of laundry equipment, has plans for an addition to its machine shop.

PHILADELPHIA.—The Biddle Motor Car Co., Inc., 1210 Frankfort street, is reported planning plant extensions.

PHILADELPHIA.—The Enterprise Mfg. Co. plans a boiler and engine house, one story, 50 x 73 feet, to cost $28,000.

PHILADELPHIA.—E. M. Hanson & Co., Inc., hardware, has been incorporated with a capital stock of $50,000, by Alan M. Pyle, E. M. Hanson and William M. Green.

PHILADELPHIA.—Froelich Bros., Inc., 142 North Seventh street, has had plans prepared for the erection of a new pipe building to be built at an estimated cost of $10,000.

PHILADELPHIA.—The Hinchman Automatic Valve Co. of America recently was incorporated with a capital of $40,000, by A. K. Hinchman, Charles A. Rosen and Peter G. Winsens.

PITTSBURGH.—The Pittsburgh Model Engine Co. has plans for a 1-story addition.

PITTSBURGH.—The plant of the Keystone Brass Foundry Co. recently was slightly damaged by fire.

PITTSBURGH.—The Pittsburgh & West Virginia railroad, Wabash building, has plans for a 1-story forge shop, 35 x 60 feet, to cost $10,000.

PITTSBURGH.—The Miller Saw Trimmer Co., Point building, has acquired the plant of the National Gear Wheel Co.

QUAKERTOWN, PA.—The Quakertown Stove Works plans a warehouse, two stories, 44 x 150 feet, to cost $75,000.

SCRANTON, PA.—The Graff Furnace Co., 2240 Jackson street, has had plans prepared for a 2-story plant addition, 60 x 120 feet, to cost $30,000.

BELLEVILLE, N. J.—The Circle Washer Co. plans a 1-story factory building, 100 x 100 feet, to cost $25,000.

CAMDEN, N. J.—The Victor Talking Machine Co. has closed contracts for a 1-story warehouse, 400 x 430 feet.

CARTERET, N. J.—A contract has been awarded by the Carteret Oil Refining Co. for an addition to its plant, one story, 100 x 260 feet.

CARTERET, N. J.—The Carteret Oil & Refining Co. has awarded a contract for a 1-story plant addition, 100 x 260 feet, to cost $175,000.

EAST ORANGE, N. J.—Jephson-Scott Body Co., Inc., 24 Sterling street, has been incorporated with a capital of $1,000,000 to manufacture automobile bodies, etc.

FIELDSBORO, N. J.—The plant of the American Ammonia Co. was recently damaged by fire.

HACKENSACK, N. J.—The Empire Chain Co. recently was incorporated in Delaware with a capital of $165,000, by Robert A. Van Voorhis, Jersey City, N. J., C. A. Cole and Arthur R. Oakley, Pearl River, N. Y.

IRVINGTON, N. J.—The Central Cornice & Skylight Works, 909 Springfield avenue, has been organized to engage in the manufacture of sheet metal products, by John Brisco, 67 Ball street, and others.

JERSEY CITY, N. J.—The Bournonville Rotary Valve Motor Co. recently was organized by E. M. Bournonville, R. I. Tuthill, E. J. Clair and others.

JERSEY CITY, N. J.—The Mensereau Metal Bed Co., 292 Johnston avenue, has plans for a plant addition to cost $15,000.

JERSEY CITY, N. J.—The Industrial Machinery Co., 435 Summit avenue, has been organized to manufacture machinery and parts, by Otto and Albert Herman, 18 Journal square, and others.

JERSEY CITY, N. J.—The New York Wire & Screen Co. has been incorporated with a capital of $100,000, by S. A. Black, A. F. McCabe and J. R. Turner.

KEARNEY, N. J.—The Federal Shipbuilding Co. plans the erection of a floating drydock capable of lifting a 12,000-ton vessel. About $1,500,000 will be invested in the addition.

NEWARK, N. J.—The Osborne Co. is having plans drawn for a power house to cost $50,000.

NEWARK, N. J.—The Forged Steel Products Co. has been organized by George Z. Premont, Harry D. Neff, E. W. Myers and Herbert Demarest.

NEWARK, N. J.—The Foster Engineering Co. has plans for a plant building, four stories, 100 x 163 feet, to cost $120,000.

NEWARK, N. J.—A power plant, 31 x 91 feet, to cost $30,000, will be erected by the Schofield Oil Co.

NEWARK, N. J.—Work has been started by the Accounting Machine Co., Inc., on a plant building, two stories, 105 x 135 feet, to cost $200,000.

NEWARK, N. J.—The New Jersey Textile Machine Co., 72 Berkshire place, has been organized by Lewis Friedenberg and others.

NEWARK, N. J.—The Newark Spinning & Stamping Co., 2 Commercial street, has been organized by G. M. Abbott and others.

NEWARK, N. J.—The Foster Engineering Co., 107-109 Monroe street, has plans for a 4-story plant addition, 63 x 100 feet, to cost $120,000.

NEWARK, N. J.—The Art Metal Works, 7 Mulberry street, has acquired a former brewery here, 122 x 153 feet, which it will remodel and equip as a plant for the production of metal specialties. Louis Aronson is president of the company.

PATERSON, N. J.—The American Metal Specialties Co., 672 East Twenty-ninth street, has been incorporated with a capital of $100,000, to manufacture iron and steel products.

TRENTON, N. J.—The Delinn Tire Co. plans a plant to include a power house.

TRENTON, N. J.—The plant of the Trenton Scrap Rubber & Supply Co., 17 Perrine avenue, was damaged by fire recently.

BALTIMORE.—P. D. Gibson, 2401 Eastern avenue, has leased space in the Varsity building, and will establish a plant.

SALISBURY, MD.—The Riverside Motor Co. is planning a 1-story machine shop, 60 x 100 feet.

Central States Activity

MILWAUKEE.—The Milwaukee Woven Wire Co. plans a factory building, two stories, 60 x 120 feet, to cost $25,000.

MILWAUKEE.—The National Brake & Electric Co., P. Tell president, will build a foundry addition 136 x 180 feet, costing $150,000.

MILWAUKEE.—The Improved Trolley Co., capitalized at $25,000, has been chartered to manufacture railroad and transportation machinery by W. J. McElroy, J. H. Cunningham and H. Schweikert.

MILWAUKEE.—The Prime Mfg. Co., Orton L. Prime president, 97 Wisconsin street, is enlarging its foundry and machine shop and will mark further extensions late in the year.

MILWAUKEE.—The Heil Co., Julius P. Heil president, manufacturer of hydraulic equipment and steel tanks, is building a shop 125 x 250 feet to cost $120,000. A 10-ton and a 5-ton crane will be needed.

SUPERIOR, WIS.—The Ajax Forge Co., Chicago, is building an addition to its Superior plant, 42 x 200 feet.

WEST BEND, WIS.—The West Bend Aluminum Co. is building a 3-story addition 168 x 192 feet costing $75,000 and will proceed immediately with the second addition.

ADRIAN, MICH.—The Ervin Foundry & Mfg. Co. contemplates plant additions.

ANN ARBOR, MICH.—The Ann Arbor Foundry

Speaking of Results

GENERAL BRIQUETTING COMPANY
25 BROAD STREET, NEW YORK CITY

"We desire to express to you an appreciation of the results obtained by our advertising in your columns. We find that a very large proportion of our returns mention THE IRON TRADE REVIEW in requesting information in reference to our processes."

PITTSBURGH IRON & STEEL FOUNDRIES COMPANY
HIGH EFFICIENCY ROLLS AND CASTINGS
INGOT MOLDS
MIDLAND, PA

"From the many responses which we have received, we can unhesitatingly state that the advertisements in your paper have been of great benefit to us, and the results far exceeded our expectations."

GENERAL STEEL COMPANY
MILWAUKEE, WIS.

"We wish to express our appreciation of your services. As the result of your efforts we received one order amounting to $60,000.

Our Advertising is bringing us some good inquiries and business."

THE
GRATON & KNIGHT MANUFACTURING CO.
OAK LEATHER TANNERS AND BELT MAKERS LEATHER SPECIALTIES
WORCESTER, MASS.

"We are pleased to give you herewith information concerning the number and the classification of inquiries received from the two 'Belting Manual" advertisements."

Total number of inquiries from the Sept. 3rd issue-49
Total number of inquiries from the Nov. 5th issue-55

Classification as follows

September 3rd.		*November 5th.*	
Asst. Supt.	2	Asst. Mgr	1
Chief Engineer	2	Asst. Supt	2
Designer	1	Designer	1
Draftsman	1	Draftsman	2
Electrician	1	Engineer	3
Foreman	5	Foreman	3
General Manager	1	Manager	2
Engineer	10	Mechanical Engineer	3
Manager	4	Master Mechanic	2
Master Mechanic	4	Miscellaneous	3
Mechanical Engineer	3	Owner and Proprietor	3
Miscellaneous	7	Purchasing Agent	6
Operator	1	Superintendent	10
Owner and Proprietor	3	Treasurer	1
Purchasing Agent	8	Unknown	7
Secretary	3	President	1
President	1	Chemist	1
Superintendent	7	Chief Engineer	3
Unknown	5		

P. H. & F. M. ROOTS CO.
CONNERSVILLE, IND.
CHICAGO, ILL.
November 25, 1919

THE IRON TRADE REVIEW
Chicago
Illinois

Attention: Mr. L. C. Pelott, Western Representative

Gentlemen:

We are enclosing signed contract for the continuance of our advertising appearing on the page facing the inside back cover of THE IRON TRADE REVIEW

A short time ago, as you will remember, we seriously considered dropping this space; in fact, we instructed you to cancel our contract. We have, however, reconsidered this action for the following reasons:

Our representatives while on business trips in various parts of the country have particularly noticed the prominent place given THE IRON TRADE REVIEW in the offices of executives of the larger metal working plants.

We have found that the subject matter of the editorial columns of THE IRON TRADE REVIEW is comprehensive and accurate and covers a field which is of particular interest to executives of the metal working industry

The value of the editorial columns and the quantity of reading matter in proportion to the advertising studied in connection with the increase in circulation leads to the natural conclusion that a large number of subscribers are actual readers.

A close study of the classified circulation report confirmed our deductions from the foregoing studies that THE IRON TRADE REVIEW is purchased and read by executives in the metal working industry, to whom we wish to appeal in our advertising.

We expect to derive a great deal of benefit from advertising ROOTS Rotary Positive Blowers in THE IRON TRADE REVIEW and will count upon your cooperation in the future as we have received it in the past in making our advertisements of interest and value to your readers.

Yours very truly,
P. H. & F. M. ROOTS COMPANY
[signature]
District Manager

JBP SC

FOREIGN TRADE COMMISSION OF PITTSBURGH
PITTSBURGH, PA., U. S. A.

"As a paid subscriber to **THE IRON TRADE REVIEW** (cash in advance, if you please) the writer is paying your valued publication a compliment of which you may not be aware.

The writer is also publicity manager of the Pittsburgh Industrial Development Commission which conducts an extensive trade paper news bureau, supplying 170 trade papers with industrial news from the Pittsburgh district and thus receives the free exchange courtesies of this extensive list and others.

However, in pursuing the work of the Foreign Trade Commission of Pittsburgh, which is strictly a buying organization for foreign inquirers, I have found your "Buyers Directory" and advertising columns of such importance that I have become, for the first time, a "paid" subscriber to a trade publication.

Furthermore, I find my subscription a most excellent investment."

GEORGE J HAGAN CO.
FURNACES AND GAS PRODUCERS
PITTSBURGH, PA.

"The last front cover we had of THE IRON TRADE REVIEW simply swamped us with inquiries and we are certainly glad to say that this has been one of the best investments we have ever made."

FRANK TOOMEY, Inc.
IRON AND WOOD WORKING MACHINERY
PHILADELPHIA

"Our advertisement in THE IRON TRADE REVIEW has proven extremely satisfactory and profitable, and has added a number of new accounts for us."

CHARLES J CLARK
Manufacturer of the
CLARK BLAST METER
1214 West Monroe Street
CHICAGO

"At one of the first foundries I called upon, I was referred to the metallurgist, who, as soon as I had introduced myself, pulled a clipping from his desk, which proved to be one of my ads from **THE IRON TRADE REVIEW.** An order for a Blast Meter followed, due in a large measure, no doubt, to the impression produced by this ad. I mention this because I have not found it practical to key these small ads, and am pleased when I discover the source of inquiries that in many cases are impossible to trace"

132-I

Co. has been incorporated with a capital of $5000, by Thomas Kooks and others.

BAD AXE, MICH.—The Huron Motor Truck Co., which was recently organized, has leased a plant here, 60 x 100 feet. F. W. Kinde is president.

BATTLE CREEK, MICH.—The Rich Steel Products Co. is establishing a plant at Los Angeles, 90 x 400 feet, to be devoted to the manufacture of steel tools and motor car parts.

CADILLAC, MICH.—The Acme Motor Truck Co. is building an addition to its plant, 64 x 225 feet.

CADILLAC, MICH.—The Cadillac Iron Works has been incorporated with a capital of $50,000, by A. W. Johnstone and others, to manufacture metal products.

DETROIT.—The International Aluminum Co. has been incorporated with a capital of $1,000,000 by Henry W. Campbell, 201 Boston boulevard, and others, to manufacture metals.

DETROIT.—The Special Tool Co. has been incorporated with a capital of $10,000, by Wendell P. Mosher, 1075 Gratiot avenue, and others, to manufacture special tools.

DETROIT.—The Machined Parts Sales Co. has been incorporated with a capital of $2000, by C. E. Larson, 2809 Grand River avenue, and others, to manufacture and sell machines and parts.

DETROIT.—The Recipro Turbine Engine Co. has been incorporated with a capital of $250,000, by Samuel G. Bargery, 528 Highland avenue, and others, to manufacture gasoline engines.

DETROIT.—The Royal Machine Co. has been incorporated with a capital of $15,000, by Samuel Levine, 219 Delmar avenue, and others, to engage in a general machine shop business.

DETROIT.—The Newport Mfg. Co. has been incorporated with a capital of $70,000, by John J. Shannon, 84 Watson street, and others, to manufacture automobile bodies.

GRAND RAPIDS, MICH.—The Oliver Machinery Co. will build a foundry addition costing $50,000.

GRAND RAPIDS, MICH.—The Imperial Metal Products Co. has been organized with a capital of $100,000 to take over the business of A. L. H. Verwys.

GRAND RAPIDS, MICH.—The Roadway Transmission Co. has been organized with a capital of $1,000,000, and will erect a plant on a 25-acre site at a cost of $250,000. The company will manufacture steel disc wheels for motor cars.

GRAND RAPIDS, MICH.—G. A. Hendricks of the Adjustable Table Co. is promoting the organization of a company to manufacture steel disk automobile wheels. The company is to be capitalized at $1,000,000, and a plant built in East Grand Rapids.

JACKSON, MICH.—The Aetna Screw Corp. has been incorporated with a capital of $16,000, by William G. Jones and others, to manufacture screw products.

KALAMAZOO, MICH.—The Handley-Knight Co. has filed articles of incorporation to manufacture automobiles in a plant now being erected here.

PONTIAC, MICH.—The Oakland Motor Car Co. has plans for an addition to its engine plant.

SOUTH HAVEN, MICH.—The Landlan Foundry Co. recently purchased a site for a plant.

CHICAGO.—The Dreis & Krump Mfg. Co. has completed a 1-story addition, 70 x 112 feet.

CHICAGO.—The Economy Machine Products Co. will build a 1-story plant 101 x 205 feet.

CHICAGO.—The Interstate Brass Mfg. Co., 11 South Desplianes street, will build a one and 2-story plant 75 x 125 feet, costing $50,000.

CHICAGO.—The Tuthill Spring Co., 760 Polk street, automobile springs, will build a one and 2-story plant 264 x 599 feet.

CHICAGO.—The E. Katzinger Co., 120 North Peoria street, has taken bids for a 7-story plant, 50 x 120 feet, to cost $200,000.

CHICAGO.—The Clemetson Co., 2607 Flourney street, has let a contract for a 1-story boiler house and engine room, 83 x 109 feet, to cost $50,000.

CHICAGO.—The Edison Electric Appliances Co. has bought a site 660 feet square on which it will build a 2-story office building 61 x 277 feet and a power house at a cost of $300,000.

CHICAGO.—The Roos Foundry, Inc., recently organized with $500,000 capital, has taken over the plant of the Henry Roos Foundry Co., 177 x 180 feet, and will make additions.

DALLAS CITY, ILL.—The plant of the Dallas City Foundry Co. recently was damaged by fire.

DECATUR, ILL.—The United States Wire Mat Co., 260 East Wood street, is having plans prepared for a 2-story plant, 60 x 150 feet, to cost $50,000.

HIGHLAND PARK, ILL.—The Getzler Storage Battery Co., capitalized at $300,000, has a Delaware charter to manufacture electric storage batteries. Incorporators are Henry F. Tenney, Charles F. Harding Jr. and Harry A. Parkin.

MACOMB, ILL.—The W. S. Dickey Co. has started work on a boiler room.

OAK PARK, ILL.—The Oil Products Appliance Co. plans a machine shop, one story, 50 x 133 feet, to cost $15,00.

PEORIA, ILL.—The Herschel Mfg. Co. has awarded a contract for an addition to its foundry, to cost $60,000.

ROCKFORD, ILL.—The plant of the Union Foundry recently was slightly damaged by fire.

WAUKEGAN, ILL.—J. W. Aulson & Sons, machinery, has been organized with a capital of $300,000.

BEDFORD, IND.—The Bedford Tractor Co. has been incorporated with a capital of $10,000, by N. M. Anderson, J. Frank Walls and John R. Pearson.

HAMMOND, IND.—The Steel Fabricating Corp. has increased its capital from $800,000 to $3,000,000 and will build a plant in Indiana costing about $150,000.

INDIANAPOLIS.—The Haywood Foundry Co. has been incorporated with a capital of $15,000, by M. E. Haywood, A. H. Cromley and Harry Farris.

INDIANAPOLIS.—The Ainsworth Fan Corp. has been incorporated with a capital of $50,000, by Mark Ainsworth, Arthur W. and L. Wood, to manufacture fan supporting devices.

INDIANAPOLIS.—The Duesenberg Automobile Motors Co., Inc., which was chartered some time ago in Delaware with a capital of $5,000,000, has a site here on which it plans the erection of a plant.

KOKOMO, IND.—The Apperson Bros. Automobile Co. is erecting a number of new buildings at its plant.

KOKOMO, IND.—The Kokomo Malleable Iron Co. has been organized with a capital of $350,000, and plans are being prepared for a malleable plant, the main building to be 85 x 360 feet, and cost about $300,000. The equipment will consist of two 15-ton furnaces with a capacity of 36 tons a day.

MUNCIE, IND.—The Delaware Aluminum Co. has started on a machine shop and foundry to cost $20,000.

SOUTH BEND, IND.—The Campbell Wire Specialty Works is expected to start work soon on a factory building, one story, 66 x 165 feet, to cost $60,000.

AKRON, O.—The Expelle Holder Mfg. Co. recently was incorporated with a capital of $15,000, by P. A. Bidinger, J. H. Miller, H. S. Kuebler, A. Kessler and A. R. Worsey.

CANTON, O.—The Berger Mfg. Co. plans improvements to its plant at a cost of $15,000.

CANTON, O.—Plans have been completed for a power house for the Hoover Suction Sweeper Co.

CELINA, O.—The Miami Tractor & Mfg. Co. has a site here on which it plans a plant.

CLEVELAND.—The Jeavous Spring Co. plans an addition to its plant, two stories, 20 x 30 feet.

CLEVELAND.—The Superior Foundry Co. has awarded a contract for a new foundry building, to cost $250,000.

CLEVELAND.—The Hertner Electric Co. has purchased a site on which it plans a plant to be devoted to the manufacture of electrical supplies.

CLEVELAND.—The plant of the Central Brass Mfg. Co., 6207 Cedar avenue, recently was damaged by fire.

CLEVELAND.—The Metal Industries Service Co. has been incorporated with a capital of $10,000, by L. B. Marsh, C. B. Solders, G. C. Bannon, P. D. Bairas and W. W. Kenyon.

CLEVELAND.—The W. J. Logan Machine & Supply Co. has been incorporated with a capital of $50,000, by F. T. Cullitan, G. E. Dunstan, P. J. Daley, G. B. Swaney and A. M. Franklin.

COLUMBIANA, O.—The McFadden Foundry & Machine Co. has been incorporated with a capital of $100,000, by W. A. Lyder, M. L. McFadden, H. W. Forney, C. Frederick, W. C. McCord and A. F. Poulton.

EAST LIVERPOOL, O.—Work has started on a substation for the Buckeye Power Co.

LIMA, O.—Work is to be started shortly on a plant for the Lima Foundry & Machine Co.

MANNINGTON, W. VA.—The Charles Phillips Tool Co. is erecting a forge shop, 72 x 86 feet.

PARKERSBURG, W. VA.—The Baldwin Tool Works is considering plans for an addition to its plant.

In the South

GEORGETOWN, KY.—The city council has passed an ordinance to permit issuance of bonds for the erection of a water and light plant.

LOUISVILLE, KY.—B. F. Avery & Sons have a permit to erect an addition to their foundry.

LOUISVILLE, KY.—The Louisville Aluminum & Brass Foundry has been incorporated by William O. Bonnie Jr., Elmore Sherman and E. E. Kirwan.

LOUISVILLE.—The Illinois Malleable Iron Co., Chicago, will start work soon on a foundry 147 x 263 feet and an annealing building 113 x 185 feet.

LOUISVILLE, KY.—The Louisville Gas & Electric Co. will rebuild its coal tipple and power plant, which was recently damaged by fire.

LOUISVILLE, KY.—The Louisville Motors Co. has purchased a site on which it will erect a garage to be equipped with a small machine shop.

LOUISVILLE, KY.—The Louisville Bussey Process Co. has purchased a site and has a permit to erect a plant, the first unit of which will cost $500,000.

LOUISVILLE, KY.—The Stitzer Mfg. Co. has been incorporated with a capital of $10,000, by

David Stitzer, O. B. Stitzer and others, to manufacture metal specialties.

LOUISVILLE, KY.—The Perfect Steam Sterilizer Co. has been incorporated with a capital of $300,000, to manufacture and assemble steam sterilizers, etc., by H. O. Wieland, W. E. Crutcher and J. C. Darnall.

RUSSELL, KY.—The Kentucky Refractories Corp., capitalized at $750,000, has been chartered to manufacture brick and has plans in preparation for three units which will be built immediately. Clyde K. Tuley is manager.

CHARLOTTE, N. C.—The Terrell Machine Co. contemplates plant additions, including a machine shop, 40 x 80 feet.

ROCKY MOUNT, N. C.—The Hadlow-Bolton Machine & Spring Co. has been incorporated with a capital of $25,000, by W. L. Hadlow and others.

CHARLESTON, S. C.—The Atlantic Welding Works has been organized to manufacture welding equipment, by A. H. Douglas, A. W. Todd and others.

COLUMBIA, S. C.—The Columbia Railway, Gas & Electric Co. plans an addition to its power plant.

GREENVILLE, S. C.—The Cyclone Starter & Truck Co. plans a factory building and power plant, to cost $125,000.

ATLANTA, GA.—Riddell Bros., machinists, 16 East Mitchell street, are constructing a new building, which is expected to be ready for occupancy shortly.

BESSEMER, ALA.—The National Steel Products Co., Inc., has opened its new plant here for the manufacture of steel castings.

GADSDEN, ALA.—The Alabama Power Co. is reported planning a power plant at Duncan Rifle on the Coosa river. The site for the plant was surveyed some time ago.

GADSDEN, ALA.—The Lehigh Portland Cement Co. is planning the construction of a transmission power line from the Alabama Power Co.'s plant to its quarries in the eastern part of Etowah county.

JACKSONVILLE, FLA.—The Kwickturn Tractor Co. recently was incorporated with a capital of $50,000, by B. J. Walker, William E. Gullett and others.

Throughout the West

DALLAS CITY, IOWA.—The plant of the Bennington Foundry recently was damaged by fire. The loss was estimated at $50,000.

DES MOINES, IOWA.—The Howard Heater Co. plans an addition to its foundry, 150 x 300 feet, to cost $30,000.

DES MOINES, IOWA.—The Des Moines Foundry & Machine Co., 314 Flynn building, is building a foundry and machine shop, 130 x 220 feet. F. D. Chase, Inc., Chicago, is engineer.

NEWTON, IOWA.—The Newton Foundry Co. will start work soon on a foundry, 135 x 300 feet, to cost $13,000.

ST. LOUIS.—The Blanton Mfg. Co., Second and Spruce streets, will equip a power plant in connection with its new addition at a cost of $225,000.

ST. LOUIS.—The Majestic Mfg. Co. is taking bids for remodeling a building to be used as a plant addition.

BRECKENRIDGE, TEX.—The Breckenridge Oil & Refining Co. is having plans prepared for an oil refinery of 1000 barrels daily capacity which will cost $100,000. V. P. Breckenridge is president.

DALLAS, TEX.—The Sweetwater Machine & Foundry Co. recently was incorporated with a capital of $10,000, by H. E. Powell, Fannie H. Powell and J. A. Mullins.

FT. WORTH, TEX.—The plant of the Stanley Truck & Body Co. recently was damaged by fire.

GALVESTON, TEX.—Plans are being prepared for rebuilding with steel or concrete a reservoir of 1,750,000 gallons capacity at a cost of $150,000. C. Wittig is city engineer.

OKLAHOMA CITY, OKLA.—The Hugh L. Turner Sheet Metal Co. recently was incorporated with a capital stock of $25,000, by Hugh L. Turner, J. W. Parkins and A. J. Arendell.

POND CREEK, OKLA.—The Grant county will take bids soon for a bridge across Salt Fork of the Arkansas river to cost $225,000. R. C. Terrell, Oklahoma City, is state engineer.

CENTRALIA, WASH.—Construction of a briqueting plant is being planned by the Centralia Briqueting Co.

ILWACO, WASH.—This city is asking for bids for a complete pumping system.

SEATTLE.—H. N. Hull and others have been named as the incorporators of the Empire Power Co.

SPOKANE.—F. J. Laher has purchased two lots here as a site for a plant to be devoted to the manufacture of automobile and truck springs.

TACOMA, WASH.—The heating plant of the Tacoma District Heating Co. recently was damaged by fire. The loss was estimated at $50,000.

VALLEY, WASH.—A $50,000 kiln and electric crusher will be erected at the mines of the American Mineral Production Co. near here.

PORTLAND, OREG.—The Northwestern Brass Foundry has been organized by W. C. Thom, Robert J. Gray and others, and will establish a foundry and repair plant.

LOS ANGELES.—The Pacific Gas Radiator Co., 614 South Grand avenue, has plans for a 1-story plant addition, 50 x 127 feet.

LOS ANGELES.—The Hopper Welding Works, 1046 South Olive street, has been organized by Charles Hopper and others.

LOS ANGELES.—The Sprague Meter Co. recently was incorporated with a capital of $10,000, by E. W. Langdon, Fred Mansur, 1100 Investment building, and others.

OAKLAND, CAL.—Konrad Gobel, Inc., Webster street, automobile bodies, is planning an addition to its plant.

SACRAMENTO, CAL.—The National Tagging Machine Co. has been incorporated with a capital of $500,000.

SAN FRANCISCO.—A. O'Neill, 68 Post street, has plans for a 1-story building to be equipped as a brass works.

Business in Canada

AYR, ONT.—The plant of the John Watson Mfg. Co., agricultural implements, recently was damaged by fire.

HAMILTON, ONT.—The Beaver Motor Truck Corp., Ltd., has been incorporated to manufacture motor trucks, etc., with $1,000,000 capital, by Harrison R. Williams, Albert P. Goering and others.

KINGSTON, ONT.—The Canada River Steamship Co., Ltd., has been incorporated to build and operate shipyards, drydocks, etc., with $1,700,000 capital, by Harold Fisher, Livius P. Sherwood, Stanley M. Clark and others.

LONDON, ONT.—The Instant Heat Co., Ltd., has been incorporated to manufacture stoves, etc., with $50,000 capital, by William J. Anderson, Chauncey C. Jarvis, Jared Vining and others.

TORONTO, ONT.—The Dominion Brass Products, Ltd., has been incorporated to manufacture brass, etc., with $40,000 capital, by Thomas B. Richardson, room 41, 2 Wellington street east; Edward A. H. Martin, 44 Elgin avenue, and others.

TORONTO, ONT.—The Autostrap Safety Razor Co., Ltd., has been chartered to manufacture razors, cutlery, etc., with $1,500,000 capital, by Samuel C. Stapleman, 182 Palmerston avenue; George A. Grover, room 166, 157 Bay street, and others.

TORONTO, ONT.—Wells & Newton (Canada), Ltd., has been incorporated to manufacture machinery, etc., with $40,000 capital, by Joseph M. Bullen, 62 Richmond street west; Harold L. Steele, 25 Jackson avenue, and others.

TORONTO, ONT.—The J. H. Edmunds Co., Ltd., has been incorporated to manufacture glassware, metal ware, machinery, etc., with $100,000 capital, by William H. Seeviour, 102 Mountview avenue; Jonathan A. Wilson and others.

TORONTO, ONT.—The Mason Tire & Rubber Co., Ltd., has been incorporated to manufacture automobile tires with $10,000 capital, by David I. Grant, 66 Woodlawn avenue; Robert R. McKay, 143 Bloor street west, and others.

WINDSOR, ONT.—Woollatt & Loveridge, Ltd., have been incorporated to manufacture automobiles, etc., with $50,000 capital, by William R. Woollatt, Stanley E. Loveridge and others.

New Trade Publications

HACK SAWS.—The Henry G. Thompson & Son Co., New Haven, Conn., has published a cardboard folder calling attention to hacksaw blades which the company manufactures.

WELDING AND CUTTING EQUIPMENT.—The Davis-Bournonville Co., Jersey City, N. J., has published a booklet in which it describes in a thorough way, welding and cutting equipment and apparatus, which it manufactures.

MOTOR EQUIPMENT.—The Smalley General Co., Inc., Bay City, Mich., is circulating a 4-page bulletin

(*Concluded on page 70*)

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Pittsburgh	$25.50 to 26.00
Chicago	23.50 to 24.00
Eastern Pennsylvania	22.00 to 23.00
Cleveland	23.00 to 23.50
St. Louis	21.50 to 22.00
Buffalo	25.00 to 26.00
New York (dealers)	19.00 to 19.50
Birmingham	19.00 to 21.00
Cincinnati	24.00 to 24.50
Valleys	25.00 to 26.00
Boston (dealers)	20.00 to 22.50
Detroit	20.50 to 21.00

BUNDLED SHEETS

Pittsburgh	$14.00 to 15.00
Eastern Pennsylvania	17.00 to 18.00
Cleveland	14.00 to 14.50
Buffalo	16.50 to 17.50
Cincinnati	16.00 to 17.00
St. Louis	13.00 to 13.50

STEEL RAILS, SHORT

Chicago	$26.00 to 26.50
Boston (dealers)	21.00 to 22.00
Cleveland	21.50 to 22.00
St. Louis	23.00 to 23.50
Birmingham	21.00 to 22.50
Cincinnati	23.00 to 23.50

STOVE PLATE

Pittsburgh	$29.00 to 30.00
Chicago	31.50 to 32.00
Eastern Pennsylvania	27.00 to 28.00
Cleveland	30.00 to 31.00
Detroit	30.50 to 31.00
Birmingham	25.00 to 28.00
Buffalo	31.50 to 32.50
New York	24.00 to 24.50
Birmingham	25.00 to 27.00
St. Louis	30.00 to 30.50
Cincinnati	27.00 to 28.00
Boston (consumers)	29.00 to 30.00

LOW PHOSPHORUS

Pittsburgh, billet and bloom crops.	$30.00 to 31.00
Chicago, billet and bloom crops...	24.00 to 25.00
Eastern Penn. (guaranteed)	31.00 to 32.00
Buffalo	31.50 to 32.50

SHOVELING STEEL

Chicago	$23.00 to 23.50
St. Louis	20.50 to 21.00

KNUCKLES, COUPLERS AND SPRINGS

Pittsburgh	$27.00 to 28.00
Chicago	25.50 to 26.00
St. Louis	23.00 to 23.50

BALED SHEETS

Pittsburgh	$20.00 to 21.00
Chicago	16.50 to 17.00
Detroit	17.50 to 18.00
Buffalo	23.00 to 23.50

FROGS, SWITCHES, GUARDS

Chicago	$23.50 to 24.00
St. Louis	24.00 to 24.50
Eastern Pennsylvania	22.00 to 23.00

BOILER PLATE, CUT

St. Louis	16.00 to 16.50

ANGLE BARS—STEEL

Chicago	$25.50 to 26.00
St. Louis	22.00 to 22.50

Iron Mill Scrap

RAILROAD WROUGHT

Pittsburgh, No. 1	$29.00 to 30.00
Pittsburgh, No. 2	25.00 to 25.50
Chicago, No. 1	28.00 to 28.50
Chicago, No. 2	24.75 to 25.25
Eastern Pennsylvania No. 1	33.00 to 34.00
Cleveland, No. 1	28.00 to 28.50
St. Louis, No. 1	27.50 to 28.00
St. Louis, No. 2	25.00 to 25.50
Buffalo	30.50 to 31.50
Cincinnati	29.00 to 30.00
Birmingham, No. 1	23.00 to 25.00
New York, No. 1 (dealers)	28.00 to 29.00
Boston (dealers)	27.50 to 28.00

WROUGHT PIPE

Eastern Pennsylvania	$22.00 to 23.00
Buffalo	20.50 to 21.50
New York (dealers)	19.50 to 20.00
Boston (dealers)	18.00 to 20.00

YARD WROUGHT

Eastern Pennsylvania, No. 1	$27.00 to 28.00

CITY WROUGHT

New York, long (dealers)	$23.00 to 23.50

BUSHELING

Chicago, No. 1	$20.25 to 20.75
Chicago, No. 2	14.00 to 14.50
Cleveland, No. 1	18.75 to 19.25
Cleveland, No. 2	16.00 to 16.25
St. Louis, No. 1	20.75 to 21.25
Buffalo, No. 1	19.50 to 20.50
Cincinnati, No. 1	20.50 to 21.50
Eastern Pennsylvania, No. 1	18.00 to 19.00

MACHINE SHOP TURNINGS

Pittsburgh	$14.00 to 15.00
Chicago	10.50 to 11.00
Eastern Pennsylvania	18.00 to 19.00
Cleveland	11.50 to 12.00
Buffalo	15.00 to 16.00
New York (dealers)	15.00 to 15.50
St. Louis	12.50 to 13.00
Detroit	11.00 to 11.50
Cincinnati	14.00 to 14.50
Birmingham	12.00 to 13.00
Valleys	13.00 to 13.25
Boston (dealers)	13.00 to 14.00

CAST IRON BORINGS

Pittsburgh	$18.00 to 18.50
Chicago	13.00 to 13.50
Eastern Pennsylvania	20.50 to 21.50
Eastern Pennsylvania (chemical)	21.00 to 22.00
Cleveland	15.75 to 16.00
St. Louis	15.00 to 15.50
Detroit	14.50 to 15.00
Buffalo	16.50 to 17.00
New York (dealers' price)	17.00 to 17.50
Cincinnati	15.00 to 16.00
Birmingham	12.00 to 13.00
Valleys	18.00 to 18.25
Boston (dealers)	15.00 to 16.00

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Eastern Pennsylvania	$16.50 to 17.50
Boston (dealers)	13.00 to 14.00
Cleveland	15.50 to 15.75

IRON AXLES

Pittsburgh	$44.00 to 45.00
New York (dealers)	46.00 to 47.00
Chicago	45.50 to 46.00
Eastern Pennsylvania	45.00 to 46.00
Detroit	41.00 to 42.00
Cleveland	42.50 to 43.00
St. Louis	43.00 to 43.50
Buffalo	39.00
Cincinnati	36.00 to 37.00
Birmingham	31.00 to 35.00

IRON RAILS

Chicago	$34.00 to 34.50
Cleveland	29.50 to 30.50
St. Louis	30.50 to 31.00
Buffalo	28.00 to 29.00
Cincinnati	26.00 to 27.00

PIPES AND FLUES

Chicago	$17.25 to 17.75
Cleveland	18.50 to 19.00
St. Louis	18.00 to 18.50
Cincinnati	20.00 to 21.00

GRATE BARS

Chicago	$31.50 to 32.00
Cleveland	30.00 to 31.00
Detroit	22.50 to 23.50
Buffalo	23.50 to 24.50
New York	24.00 to 25.00
Eastern Pennsylvania	29.00 to 30.00

FORGE FLASHINGS

Cleveland, large	16.00 to 16.50
Chicago, small	20.50 to 21.00
Cleveland, small	16.50 to 17.00
Boston (dealers)	14.00 to 15.00

FORGE SCRAP

Chicago	$25.00 to 25.50
Eastern Pennsylvania, No. 1	17.00 to 18.00
Boston	14.00 to 15.00

ARCH BARS AND TRANSOMS

Chicago	$36.00 to 36.50
St. Louis	34.00 to 34.50

ANGLE BARS—IRON

Chicago	$35.00 to 35.50
St. Louis	30.00 to 30.50

Iron and Steel Works Scrap

AXLE TURNINGS

Pittsburgh	$20.00 to 21.00
Eastern Pennsylvania	21.00 to 22.00
Boston (dealers)	15.00 to 16.00
St. Louis	16.00 to 16.50
Detroit	$16.50 to 16.50
Cleveland	17.75 to 18.00
Buffalo	19.50 to 20.50
Chicago	19.50 to 20.00

STEEL CAR AXLES

Pittsburgh	$33.00 to 34.00
Eastern Pennsylvania	40.00
Cleveland	33.00 to 34.00
St. Louis	36.50 to 37.00
Buffalo	39.00
Chicago	37.00 to 37.50
New York (dealers)	41.00 to 42.00
Birmingham	32.00 to 35.00
Boston (dealers)	36.00 to 36.50
Detroit	32.50 to 33.00

SHAFTING

Eastern Pennsylvania	34.00 to 35.00
St. Louis	32.00 to 32.50
New York (dealers)	29.00 to 30.00
Chicago	36.50 to 37.00

Iron Foundry Scrap

CAR WHEELS

Pittsburgh, iron	$38.00 to 39.00
Pittsburgh, steel	27.00 to 28.00
Chicago, iron	35.50 to 36.00
Eastern Pennsylvania, iron	38.00 to 39.00
Cleveland, iron	33.50 to 34.50
St. Louis, iron	34.50 to 35.00
Buffalo, iron	37.00 to 38.00
Birimngham, iron	29.00 to 30.00
Birmingham, tram car	29.00 to 30.00
Boston (consumers)	39.00 to 40.00
Cincinnati	30.00 to 31.00
New York, iron	36.00 to 37.00
Detroit	33.00 to 34.00

NO. 1 CAST SCRAP

Pittsburgh, cupola	$38.00 to 40.00
Chicago, cupola	41.00 to 41.50
Eastern Pennsylvania, cupola	37.00 to 39.00
Cleveland, cupola	39.00 to 40.00
New York, cupola (dealers)	37.00 to 38.00
Cincinnati, No. 1, machinery, cupola (net)	34.00 to 35.00
Detroit	31.50 to 32.50
Birmingham, cupola	30.00 to 33.00
St. Louis, railroad	29.50 to 30.00
St. Louis, agricultural	36.00 to 36.50
Buffalo	37.00 to 38.00
Boston (consumers)	42.00 to 43.00
Valleys	38.00 to 39.00

HEAVY CAST

New York (dealers)	$35.00 to 36.00
Buffalo	27.00 to 28.00
Pittsburgh	32.00 to 33.00
Cleveland	28.50 to 29.00
Boston (consumers)	34.00 to 35.00

MALLEABLE

Pittsburgh, railroad	$30.00 to 31.00
Pittsburgh, agricultural	27.00 to 28.00
Chicago, railroad	28.75 to 29.25
Chicago, agricultural	28.50 to 29.00
Eastern Pennsylvania, railroad	28.00 to 29.00
Cleveland railroad	31.50 to 32.00
Cleveland, agricultural	26.50 to 27.00
St. Louis, railroad	26.50 to 27.00
St. Louis, agricultural	25.00 to 25.50
Cincinnati, railroad	29.00
Cincinnati, agricultural	28.00 to 29.00
Boston, railroad	27.50 to 28.50
Buffalo	30.50 to 31.50

Miscellaneous Scrap

REROLLING RAILS
5 feet and over

Pittsburgh district	$31.00 to 32.00
Chicago	34.50 to 35.00
Eastern Pennsylvania	31.00 to 33.00
Cleveland	30.00 to 31.00
St. Louis	30.50 to 31.00
Birmingham	29.00 to 30.00
Boston (dealers)	29.00 to 30.00
Detroit	28.00 to 29.00

LOCOMOTIVE TIRES

Chicago	$27.00 to 27.50
St. Louis	22.00 to 22.50

BOILER PUNCHINGS

Chicago	27.00 to 27.50
Eastern Pennsylvania	27.00 to 28.00

When the Scrap Market Is Dull

While seeking a more favorable market the best form in which to hold your sheet scrap, etc., and the form that always commands the best prices is the dense hydraulically compressed bundle.

Thus less storage space is required—under roof to prevent loss from corrosion; and because of greater car tonnage under minimum car rate, you add from 25% to 50% freight savings to your profits.

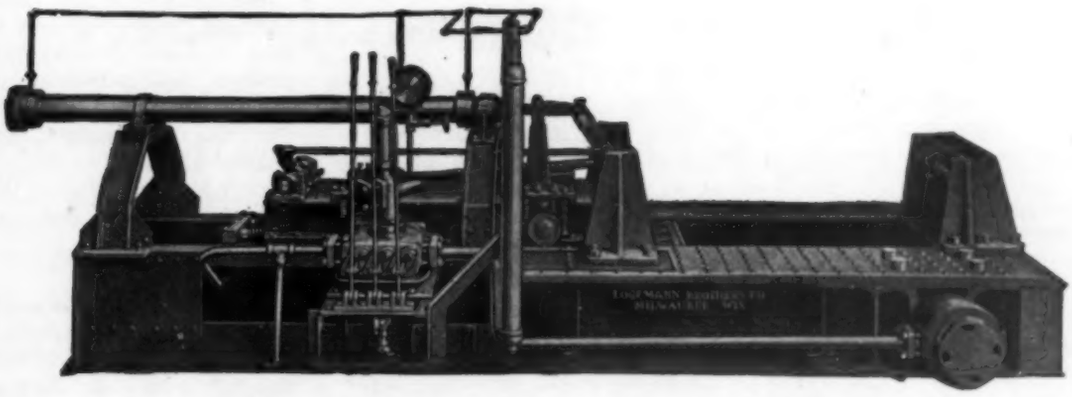
For greatest compression, largest daily output, at lowest operating cost, use

LOGEMANN Double Ram Hydraulic Scrap Metal PRESSES

You can enjoy the advantage of the accumulated experience from hundreds of Logemann scrap bundling presses now in use.

They embody a simplified mechanism that requires no special skill to operate rapidly. Press and pump are so designed that all the motive power applied is utilized, thus reducing power cost.

Powerfully built, all working parts constructed to resist the severest strains—selected material, first class workmanship—all minimize upkeep cost and insure lasting efficiency.



A medium sized press is shown; there are smaller and larger sizes in standard models.

Advise character and daily tonnage of your scrap and let us suggest press best suited to your requirements.

Logemann Brothers Co.

3126 Burleigh Street
Milwaukee, Wis.

Builders of Baling Presses and Hydraulic Machinery

(*Concluded from page 67*)

in which it gives recommendations for motors and electrical equipment to be used in connection with thread millers which it manufactures.

FLEXIBLE SHAFTING.—The Stow Mfg. Co., Inc., Binghamton, N. Y., has published a 16-page illustrated booklet in which flexible shafting for use on portable tools, is described and illustrated. Some interesting data are given.

LIFTING MAGNETS.—The Cutler-Hammer Mfg. Co., Milwaukee, has published an 8-page illustrated booklet, in which lifting magnets of the circular type are described and illustrated. The illustrations show magnets of this type in actual operation and some valuable information is given concerning operation.

FLEXIBLE TUBING.—The Breeze Mfg. Co., Newark, N. J., is circulating a cardboard folder in which the use of flexible tubing is illustrated and described. The illustrations show this tubing being used on a portable grinding machine, as a conveyor for cooling compound and in oxy-acetylene welding.

BUILDING.—Frank D. Chase, Inc., Chicago, has issued an illustrated booklet, "Industrial Sermonettes," which contains a series of new applications of old stories. The illustrations are of various plants which were designed and built by the company. A list of clients is given.

CYLINDRICAL GRINDING.—The Norton Co., Worcester, Mass., has published a leather-bound book of 47 pages, containing a treatise on the principles of cylindrical grinding. The book is replete with illustrations and information on cylindrical grinding operations, which are of value to all interested in this work. The treatise is by Charles H. Norton.

AIR COMPRESSORS.—The Pennsylvania Pump & Compressor Co., Easton, Pa., is circulating a 12-page illustrated booklet in which power driven, straight line, single stage air compressors are described and illustrated in detail. Air receivers, to absorb the pulsation of the compressor discharge and cause an even steady flow through the service air line are also described.

HOISTING BUCKETS.—Hoisting and conveying machinery, self-dumping and self-righting coal and ore buckets, side, end and bottom dumping cars, track for industrial railways, valves and screens for coal pockets, coal chutes, charging cars, etc., are described and illustrated in a booklet being circulated by G. L. Stuebner, Iron Works, Long Island City, N. Y.

HOISTS.—The O'Rourke Crane & Engineering Co., Inc., New York, has published an illustrated bulletin, in which it describes and illustrates hoists, derricks and cranes. Any kind of power can be used in the operation of these cranes and hoists. Control and load while hoisting and lowering is accomplished by manual braking, mechanical braking, dynamic braking and solenoid braking, according to the type of motor used. These cranes and hoists are equipped with safety devices throughout. Other details are given and the illustrations show 24 types of hoists and cranes.

TUMBLING MILLS.—The Whiting Foundry Equipment Co., Harvey, Ill., has issued a new bulletin of 28 pages, superseding bulletin No. 132, in which tumbling mills are described and illustrated. The booklet tells of the advantage of cleaning castings, advice as to selection of cleaning room equipment, describes the various standard types of mills and a number of the illustrations are of actual installations. This booklet is mailed free on request.

DYEHOUSE VENTILATION.—The Buffalo Forge Co., Buffalo, has published an illustrated booklet which shows the use of ventilation equipment in dyehouses and bleacheries, where fog and the constant dripping of moisture from the roof is one of the big problems faced by ventilation engineers. The booklet contains a series of seven pictures, showing a room full of fog, and the effect after the ventilation equipment has been put to work.

LOADER.—The Lake Superior Loading Co., Duluth, Minn., has published a 16-page booklet, in which it describes and illustrates a mechanical loader for use in mines. The machine is operated by air, and is comprised of three main elements, a truck with wheels, a platform or turntable body providing lateral movement to the shovel and a body member containing the operating cylinders and shovel guide members in which the shovel and its arm function.

Business Changes Recently Announced by the Trade

THE Specialty Brass Co., Kenosha, Wis., manufacturing creamery equipment and general brass fittings, announces the establishment of a new eastern plant at Albion, N. Y., which will have a capacity about 50 per cent greater than the Kenosha works. To handle the eastern business, three directors are leaving the Kenosha plant. They are N. J. Anderson, Martin Peterson and Henry Anderson. C. W. Anderson, president of the company, will continue to make his headquarters in Kenosha, where the general offices are retained.

* * *

The Independent Brass Foundry, Louisville, Ky., is now located in its new plant in that city.

* * *

The Henry S. Spackman Engineering Co., of Philadelphia, has filed notice of a change of name to the E. L. Conwell Co.

* * *

The Champion Bed Spring Co., East Thirty-seventh street and Iron court, Cleveland, has changed its name to the Champion Spring Co.

* * *

The Dayton Pump & Engineering Co., manufacturer of water and gasoline pumps, has recently opened a southeastern office in Atlanta, Ga., in the Peachtree Arcade building in charge of J. B. Hale.

The address of the Material Handling Machinery Manufacturers' association has been changed from 35 West Thirty-ninth street, New York, to 110 West Fortieth street.

* * *

The Consolidated Rolling Mills & Foundry Co., Inc., which has a large plant in Mexico City, including rolling mills, foundries, etc., has moved its headquarters from 25 Broad street to 30 Church street, N. Y.

* * *

John E. Pfeffer has returned to his office at 29 South La Salle street, Chicago, representing the Continental Engineering Co., after finishing his war work for the American Society of Mechanical Engineers.

* *

The Iron Trade Products Co., Farmers Bank building, Pittsburgh, has opened a branch office in suite 9, Greenwood building, Sixth and Vine streets, Cincinnati, with C. S. Siebert in charge as district sales manager.

* * *

The board of directors of the Canadian Pressed Metals Co., whose plant is being erected at Marysville, Mich., has decided to change the name of the corporation to that of the Michigan Bushings Corp.

Without change in mangement, control or location, the Turner, Vaughn & Taylor Co., Cuyahoga Falls, O., has changed its corporate name to the Vaughn Machinery Co. C. W. Vaughn continues as president and treasurer, and L. A. Vaughn continues as secretary and general manager.

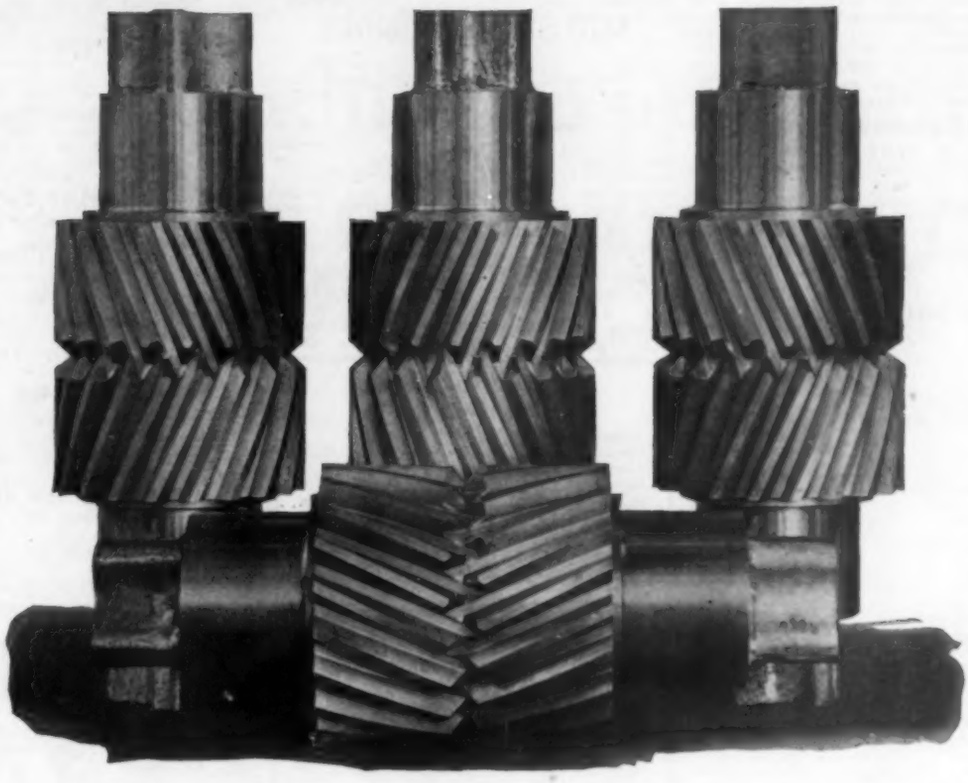
* * *

More clearly to identify its interests and activities, 90 per cent of which are devoted to petroleum and petroleum products, the Ohio Cities Gas Co., Columbus, O., has changed its name, effective July 1, to the Pure Oil Co., which has been the name of a subsidiary company since 1917.

* * *

The trustees of the estate of W. J. Rainey, 52 Vanderbilt avenue, New York; Oliver building, Pittsburgh, and Real Estate Trust building, Philadelphia, seller of coal and coke, announce that the business has been incorporated and the name changed to W. J. Rainey, Inc. Officers of the new corporation are: Chairman of the board, Roy A. Rainey; president and treasurer, Scott Stewart; vice president in charge of operations, L. L. Willard; vice president in charge of sales and raw material purchases, John McElwain; and secretary, H. R. Ahrens.

Gears for All Types of Rolling Mill Service



Open Hearth Steel Castings
FALK HERRINGBONE GEARS

Combine high efficiency, great reliability and long wearing quality with low upkeep.

These advantages, and many others can be derived from an installation of Falk Herringbone Gears.

Steel Castings from 1 to 100,000 lbs.

Write for Particulars

The Falk Company Milwaukee, Wis.

REPRESENTATIVES:

PITTSBURGH, W. O. Beyer, 1007 Park Building
SAN FRANCISCO, F. W. Grimwood, Rialto Bldg.
NEW YORK, M. P. Fillingham, 50 Church Street
DENVER, COLO., Denver Engineering Works
WILKES-BARRE, PENNA., Vulcan Iron Works

Iron and Steel Prices

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 per cent iron	$7.45
Mesabi Bessemer, 55 per cent iron	7.20
Old range nonbessemer, 51½ per cent iron	6.70
Mesabi nonbessemer, 51½ per cent iron	6.55

Port Henry Iron Ore, f.o.b. Port Henry

Old bed 21 furnace	$5.80
Old bed concentrates, 63 per cent	6.70
Harmony, cobbed, 63 per cent	6.70
New bed, low phos., 65 per cent	9.50
Lump ore for fix	7.00

Manganese Ore

Brazilian, 45 to 50 per cent, c.i.f. Atlantic ports, 70 to 85 cents per unit, nominal.

Indian 70 to 80 cents per unit, c.i.f. Atlantic ports, 70 to 80 cents per unit.

Caucasian, 48 to 50 per cent, f.o.b. cars, Atlantic ports, 75 to 85 cents per unit.

GRAVEL FLUOR SPAR

85 per cent f.o.b. Kentucky and Illinois, per ton ..... $22.00 to 25.00

Warehouse Prices

Steel bars, Boston	5.50c
Steel bars, Chicago	3.37c to 3.87c
Steel bars, Cleveland	3.27c to 6.00c
Steel bars, Detroit	4.485c
Steel bars, Philadelphia	5.00c
Steel bars, Phila., ½ inch and smaller	6.00c to 10.00c
Steel bars, New York	3.37c to 5.25c
Steel bars, St. Louis	3.94c to 4.50c
Steel bars, Cincinnati	5.00c
Steel bars, St. Paul	3.59c to 4.095c
Steel bars, Buffalo	4.56c
Iron bars, Boston	5.50c
Iron bars, Buffalo	5.26c
Iron bars, Chicago	3.87c to 4.50c
Iron bars, Detroit	4.485c
Iron bars, St. Louis	4.50c
Iron bars, Cincinnati	4.50c
Iron bars, Philadelphia	5.00c
Iron bars, New York	4.50c to 5.25c
Shapes, Chicago	3.47c to 3.97c
Shapes, Detroit	4.335c
Shapes, Boston	5.50c
Shapes, St. Louis	4.04c
Shapes, St. Paul	3.695c to 4.195c
Shapes, New York	3.47c to 5.00c
Shapes, Cleveland	3.37c to 4.50c
Shapes, Philadelphia	4.50c
Shapes, Phila., 2-inch and smaller	5.00c
Shapes, Buffalo	4.41c
Shapes, Cincinnati	4.25c
Plates, Buffalo	4.61c
Plates, Chicago	3.67c to 4.17c
Plates, Detroit	4.535c
Plates, Boston	6.00c
Plates, St. Louis	4.24c
Plates, St. Paul	3.895c to 4.395c
Plates, New York	3.67c to 5.00c
Plates, Cleveland	3.75 to 4.50c
Plates, Phila., ¼-inch and heavier	5.50c
Plates, Phila., ⅛-inch	6.00c
Plates, Cincinnati	6.00c
No. 10 blue anl. sheets, N. Y.	7.12c to 9.00c
No. 10 blue anl. sheets, Phila.	8.00c
No. 10 blue anl. sheets, Chicago	4.57c to 7.02c
No. 10 blue anl. sheets, Cleveland	6.75c to 8.10c
No. 10 blue anl. sheets, Boston	8.00c
No. 10 blue anl. sheets, Buffalo	6.51c
No. 10 blue anl. sheets, Detroit	7.50c
No. 10 blue anl. sheets, St. L.	7.00c to 7.09c
No. 10 blue anl. sheets, Cincinnati	7.00c
No. 10 blue anl. sheets, St. Paul	4.79c to 7.225c
No. 10 blue anl. sheets, Boston	8.00c
No. 28 black sheets, Chicago	5.62c to 8.00c
No. 28 black sheets, New York	8.50c to 10.00c
No. 28 black sheets, Phila.	8.50c
No. 28 black sheets, Cleveland	6.75c to 8.90c
No. 28 black sheets, Boston	9.15c
No. 28 black sheets, Cincinnati	8.50c to 9.00c
No. 28 black sheets, Detroit	8.50c
No. 28 black sheets, St. Louis	8.10c
No. 28 black sheets, St. Paul	5.845c to 8.225c
No. 28 black sheets, Buffalo	8.25c
No. 28 galv. sheets, Chicago	9.50c
No. 28 galv. sheets, New York	9.75c to 11.00c
No. 28 galv. sheets, Phila.	10.50c
No. 28 galv. sheets, Boston	10.50c
No. 28 galv. sheets, Cleveland	9.00c to 10.00c
No. 28 galv. sheets, Cincinnati	8.50c to 9.00c
No. 28 galv. sheets, Detroit	10.00c
No. 28 galv. sheets, Buffalo	9.50c
No. 28 galv. sheets, St. Louis	9.60 to 10.00c
Bands, New York	6.32c to 7.00c
Bands, Boston	7.25c
Bands, Detroit	5.685c
Bands, Buffalo	5.76c
Hoops, Buffalo	6.01c
Hoops, Boston	8.25c
Hoops, New York	6.57c to 7.50c
Hoops, Detroit	5.835c
Cold rolled shafting, Buffalo	6.00c
Cold rolled shafting, New York	6.25c to 8.00c
Cold rolled shafting, Boston	8.00c
Cold rolled flats, squares and hexagons, New York	6.75c to 8.50c
Cold rolled rounds	6.25c to 8.00c

Mill Sheet Schedule

Black

Differentials for gage, per 100 pounds

No. 30	+20c
No. 29	+10c
No. 28 (carloads)	Base
No. 27	—05c
Nos. 25-26	—10c
Nos. 22-24	—15c
Nos. 17-21	—20c
Nos. 15-16	—25c
Nos. 13-14	—30c
Nos. 10-12	—35c

Standard Sizes

Gages Nos. 12 to 30 inclusive, 24, 26, 28 and 30 inches wide by 72, 84, 96 and 120 inches long. Gages Nos. 14 to 28 in addition to the foregoing, 36 wide by 96 inches and 120 inches long. Extras for width and length to be added.

Freight Rates

PIG IRON

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.80
Boston	5.20
Philadelphia	4.40
Pittsburgh	1.40
St. Louis	4.60
Minneapolis St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.80
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$8.00
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York	7.70
Philadelphia	6.50
Pittsburgh	5.70
Savannah, Ga.	3.40
St. Louis	4.30
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.80
Cincinnati	1.80
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis St. Paul	5.70

FINISHED MATERIAL

Pittsburgh, carloads, per 100 lbs., to:

New York	27.0 cents
Philadelphia	25.0 cents
Boston	30.0 cents
Buffalo	21.0 cents
Baltimore	23.0 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	40.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	57.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

GALVANIZED AND LONG TERNE

No. 30	+50c
No. 29	+25c
No. 28 (carloads)	Base
No. 27	+15c
Nos. 25-26	—30c
Nos. 22-24	—45c
Nos. 17-21	—60c
Nos. 15-16	—75c
Nos. 12-14	—90c
Nos. 10-11	—1.00

Standard Sizes

Gages Nos. 12 to 30 inc., 24, 26, 28, 30 and 36 in. wide by 72, 84, 96 and 120 in. long. Extras for width and length to be added.

BLUE ANNEALED

Differential for gage per 100 pounds

Nos. 8 and heavier	— 5c
Nos. 9 and 10 (carloads)	Base
Nos. 11 and 12	+ 5c
Nos. 13 and 14	+10c
Nos. 15 and 16	+20c

Standard Sizes

Widths—24-26-28-30-36 and 48 inches.
Lengths—72-84-96-120 and 144 inches.
Extras for width and length to be added.

Tubular Goods

Pittsburgh basing discounts to jobbers in carloads.

Steel Pipe

STANDARD WEIGHT

Butt Weld	Black	Galvanized
⅛, ¼ and ⅜-inch	47 to 50½	20½ to 24
½-inch	51 to 54½	36½ to 40
¾ to 3-inch	54 to 57½	40½ to 44
Lap Weld		
2-inch	47 to 50½	34½ to 38
2½ to 6-inch	50 to 53½	37½ to 41
7 to 12-inch	47 to 50½	33½ to 37
13 to 14-inch	37½ to 41	
15-inch	35 to 38½	
PLUGGED AND REAMED		
Butt Weld		
1 to 3-inch	52 to 55½	38½ to 42
Lap Weld		
2-inch	45 to 48½	32½ to 36
2½ to 6-inch	48 to 51½	35½ to 39
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼ and ⅜-inch	43 to 46½	25½ to 29
½-inch	48 to 51½	35½ to 39
¾ to 1½-inch	52 to 55½	39½ to 43
2 to 3-inch	53 to 56½	40½ to 44
Lap Weld		
2-inch	45 to 48½	33½ to 37
2½ to 4-inch	48 to 51½	36½ to 40
4½ to 6-inch	47 to 50½	35½ to 39
7 to 8-inch	43 to 46½	29½ to 33
9 to 12-inch	38 to 41½	24½ to 28
DOUBLE EXTRA STRONG PLAIN		
Butt Weld		
½-inch	39 to 42½	28½ to 32
¾ to 1½-inch	42 to 45½	31½ to 35
2 to 2½-inch	44 to 47½	33½ to 37
Lap Weld		
2-inch	37 to 40½	27½ to 31
2½ to 4-inch	39 to 42½	29½ to 33
4½ to 6-inch	38 to 41½	28½ to 32
7 to 8-inch	33 to 36½	19½ to 23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt Weld		
¼-inch	+	35
⅜-inch	15½ to 25½	+ 1½ to 11½
½-inch	19½ to 29½	1½ to 11½
¾ to 1½-inch	24½ to 34½	8 to 18½
Lap Weld		
2-inch	20½ to 28½	6½ to 14½
2½ to 6-inch	22½ to 30½	9½ to 17½
7 to 12-inch	19½ to 27½	6½ to 14½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG PLAIN ENDS

Butt Weld	Black	Galvanized
¼-inch	+ 9	+ 35
⅜-inch	13½ to 23½	6½ to +3½
½-inch	18½ to 28½	5½ to 15½
¾ to 1½-inch	24½ to 34½	9½ to 19½
Lap Weld		
2-inch	21½ to 29½	8½ to 16½
2½ to 4-inch	23½ to 31½	11½ to 19½
4½ to 6-inch	22½ to 30½	10½ to 18½
7 and 8-inch	14½ to 22½	2½ to 10½
9 and 12-inch	9½ to 17½	5½ to +2½

DOUBLE EXTRA STRONG, PLAIN ENDS

Butt Weld	Black	Galv.
½-inch	15½ to +°1½	3½ to +51½
¾-inch	20½ to +22½	8½ to +34½
1-inch	+38½	+50½
1¼-inch	+22½	+34½
1½-inch	+21½	+33½
Lap Weld		
2-inch	16½ to + 7½	4½ to +10½
2½ to 4-inch	18½ to + 2½	9½ to +11½